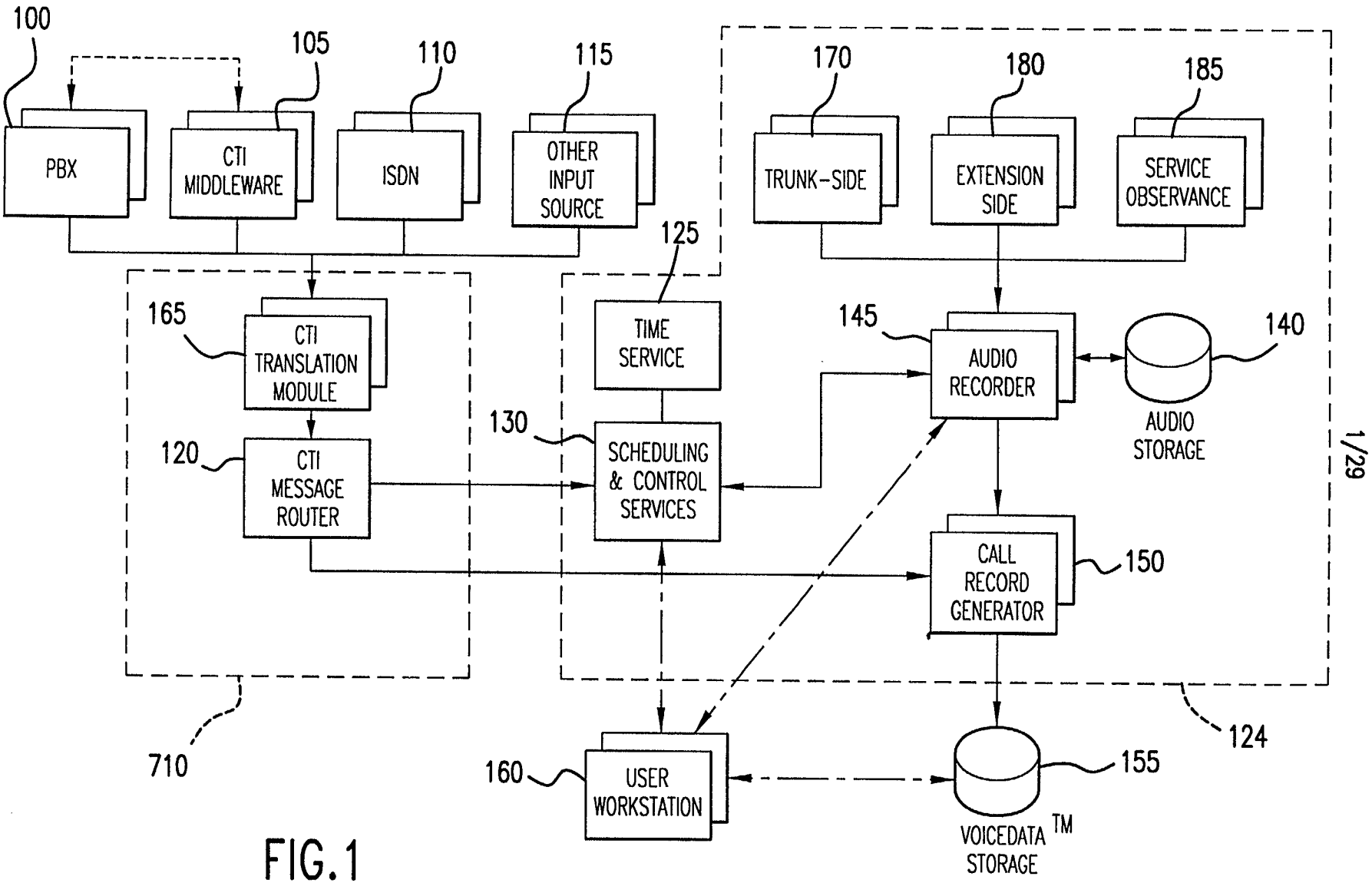
100
105
110
115
170
180
185
PBX
CTI MIDDLEWARE
ISDN
OTHER INPUT SOURCE
TRUNK-SIDE
EXTENSION SIDE
SERVICE OBSERVANCE
125
165
CTI TRANSLATION MODULE
TIME SERVICE
145
AUDIO RECORDER
140
AUDIO STORAGE
130
120
CTI MESSAGE ROUTER
SCHEDULING & CONTROL SERVICES
CALL RECORD GENERATOR
150
710
124
160
USER WORKSTATION
155
VOICEDATA TM STORAGE
1/29

FIG.1

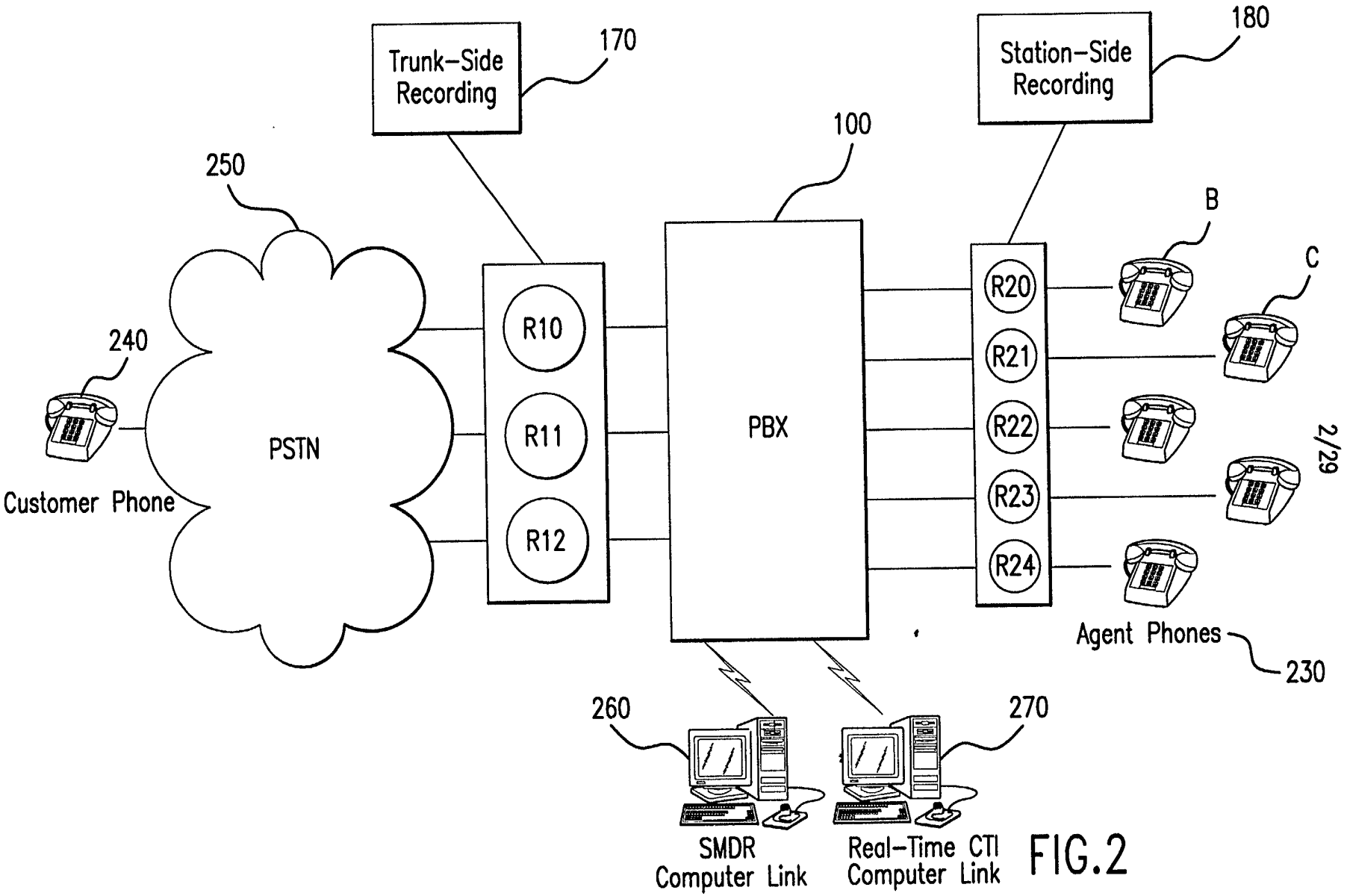
Trunk–Side Recording
170
Station–Side Recording
180
100
250
240
PSTN
Customer Phone
R10
R11
R12
PBX
R20
R21
R22
R23
R24
B
C
Agent Phones
230
260
270
SMDR Computer Link
Real–Time CTI Computer Link

FIG.2

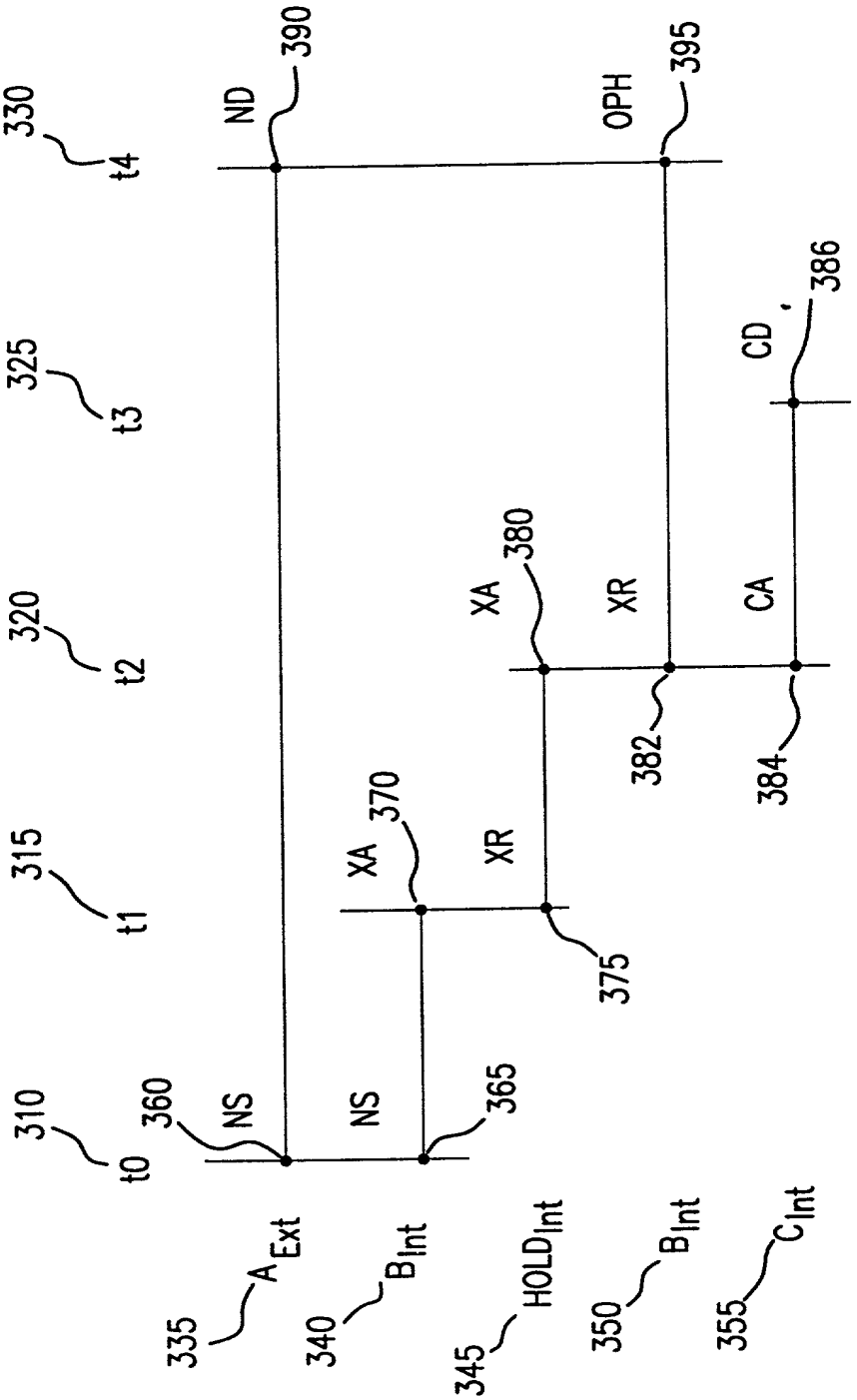
310
t0
315
t1
320
t2
325
t3
330
t4
360
NS
NS
365
XA
370
XR
375
XA
380
XR
382
CA
384
CD'
386
ND
390
OPH
395
335
A Ext
340
B Int
345
HOLD Int
350
B Int
355
C Int

FIG.3

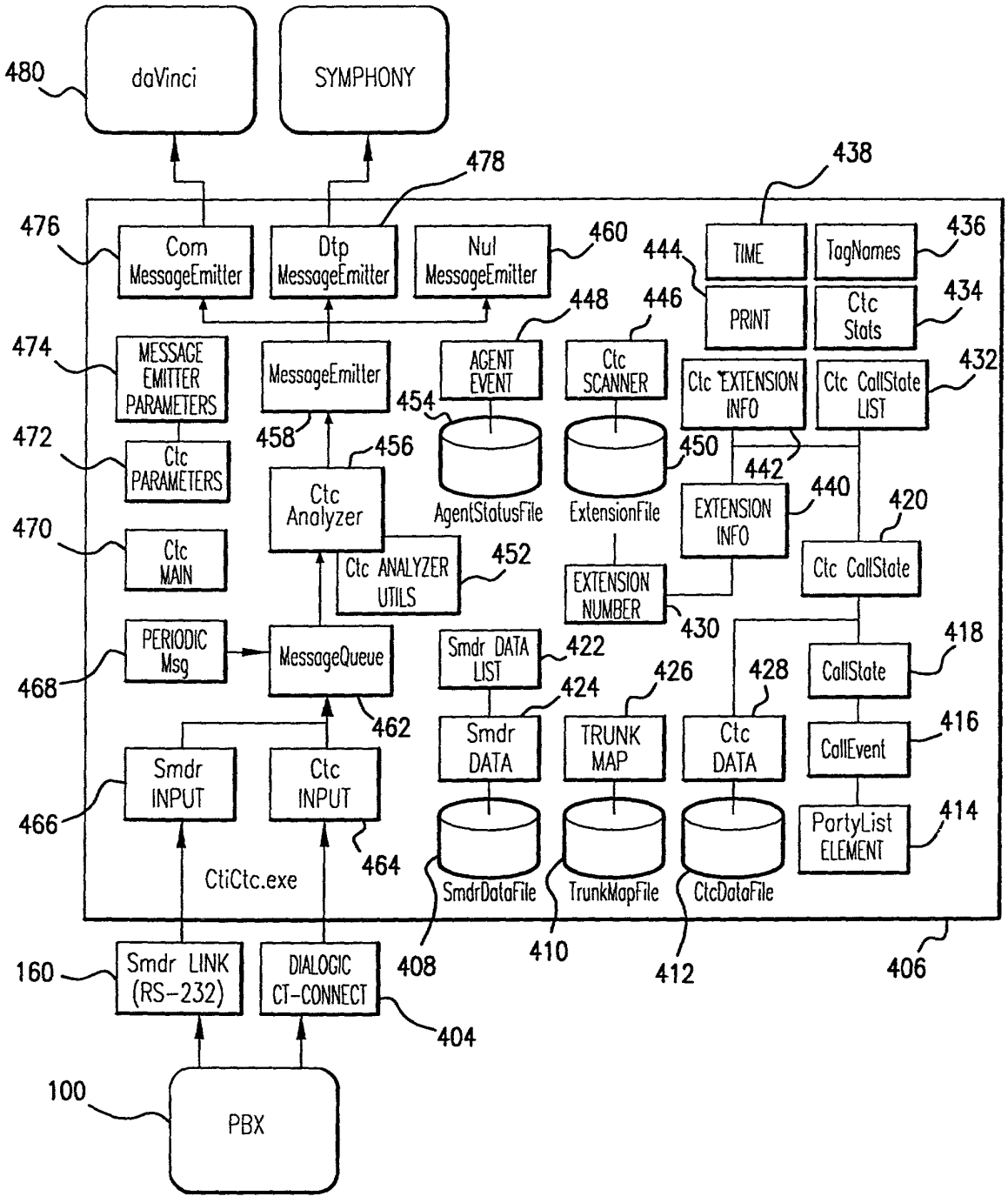
480
daVinci
SYMPHONY
478
438
476
Com MessageEmitter
Dtp MessageEmitter
Nul MessageEmitter
460
444
TIME
TagNames
436
PRINT
Ctc Stats
434
448
446
474
MESSAGE EMITTER PARAMETERS
MessageEmitter
AGENT EVENT
Ctc SCANNER
Ctc EXTENSION INFO
Ctc CallState LIST
432
454
458
472
Ctc PARAMETERS
456
450
442
Ctc Analyzer
AgentStatusFile
ExtensionFile
EXTENSION INFO
440
420
470
Ctc MAIN
Ctc ANALYZER UTILS
452
EXTENSION NUMBER
Ctc CallState
430
PERIODIC Msg
MessageQueue
Smdr DATA LIST
422
418
468
462
424
426
428
CallState
Smdr DATA
TRUNK MAP
Ctc DATA
CallEvent
416
Smdr INPUT
Ctc INPUT
PartyList ELEMENT
414
466
464
CtiCtc.exe
SmdrDataFile
TrunkMapFile
CtcDataFile
Smdr LINK (RS-232)
DIALOGIC CT-CONNECT
160
408
410
412
406
404
100
PBX

FIG.4

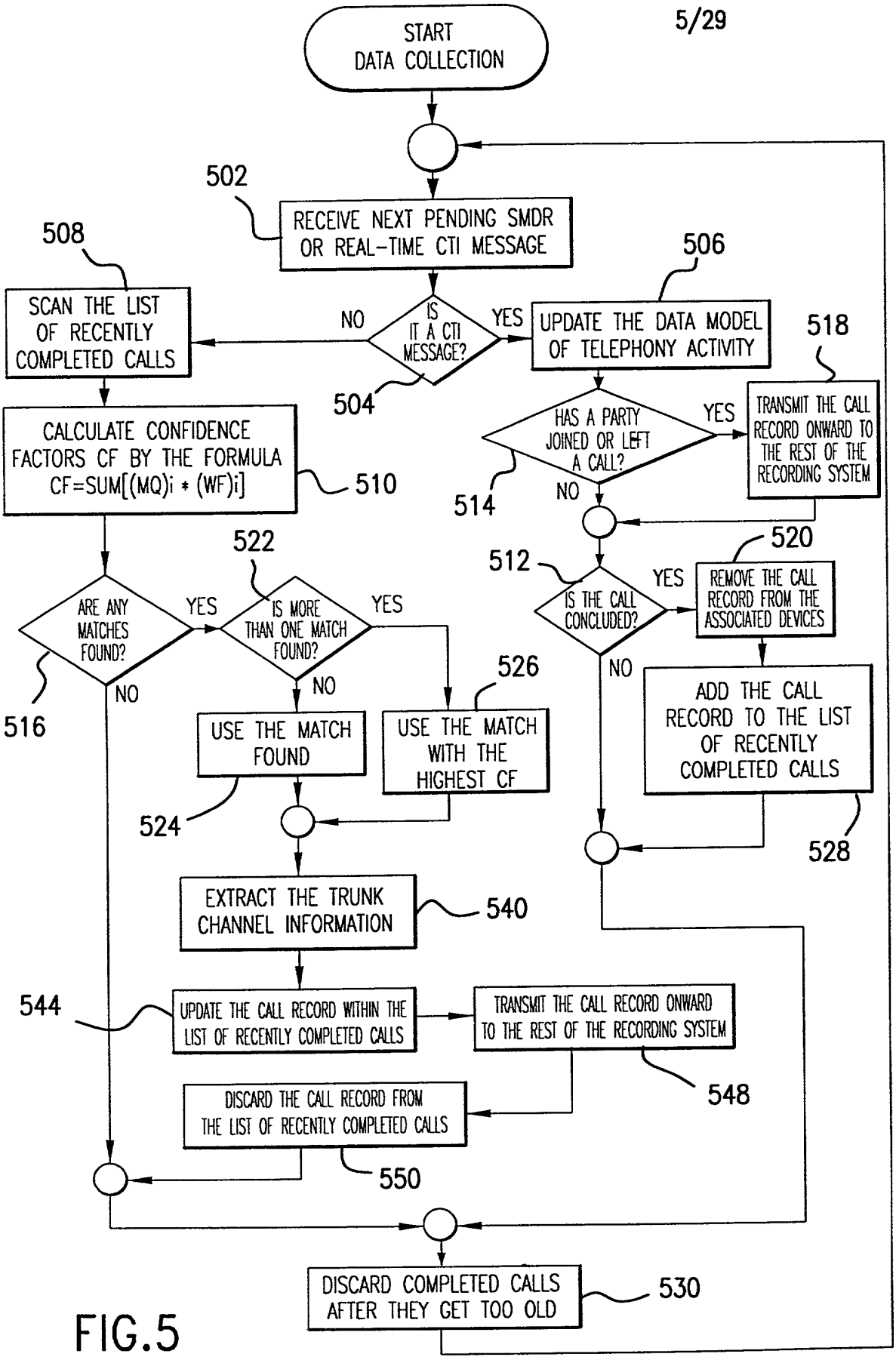
START DATA COLLECTION
502
RECEIVE NEXT PENDING SMDR OR REAL-TIME CTI MESSAGE
IS IT A CTI MESSAGE?
NO
YES
504
508
SCAN THE LIST OF RECENTLY COMPLETED CALLS
506
UPDATE THE DATA MODEL OF TELEPHONY ACTIVITY
518
HAS A PARTY JOINED OR LEFT A CALL?
YES
NO
514
TRANSMIT THE CALL RECORD ONWARD TO THE REST OF THE RECORDING SYSTEM
CALCULATE CONFIDENCE FACTORS CF BY THE FORMULA CF=SUM[(MQ)i * (WF)i]
510
512
IS THE CALL CONCLUDED?
YES
NO
520
REMOVE THE CALL RECORD FROM THE ASSOCIATED DEVICES
ADD THE CALL RECORD TO THE LIST OF RECENTLY COMPLETED CALLS
528
522
ARE ANY MATCHES FOUND?
YES
NO
516
IS MORE THAN ONE MATCH FOUND?
YES
NO
526
USE THE MATCH FOUND
USE THE MATCH WITH THE HIGHEST CF
524
EXTRACT THE TRUNK CHANNEL INFORMATION
540
544
UPDATE THE CALL RECORD WITHIN THE LIST OF RECENTLY COMPLETED CALLS
TRANSMIT THE CALL RECORD ONWARD TO THE REST OF THE RECORDING SYSTEM
548
DISCARD THE CALL RECORD FROM THE LIST OF RECENTLY COMPLETED CALLS
550
DISCARD COMPLETED CALLS AFTER THEY GET TOO OLD
530

FIG.5

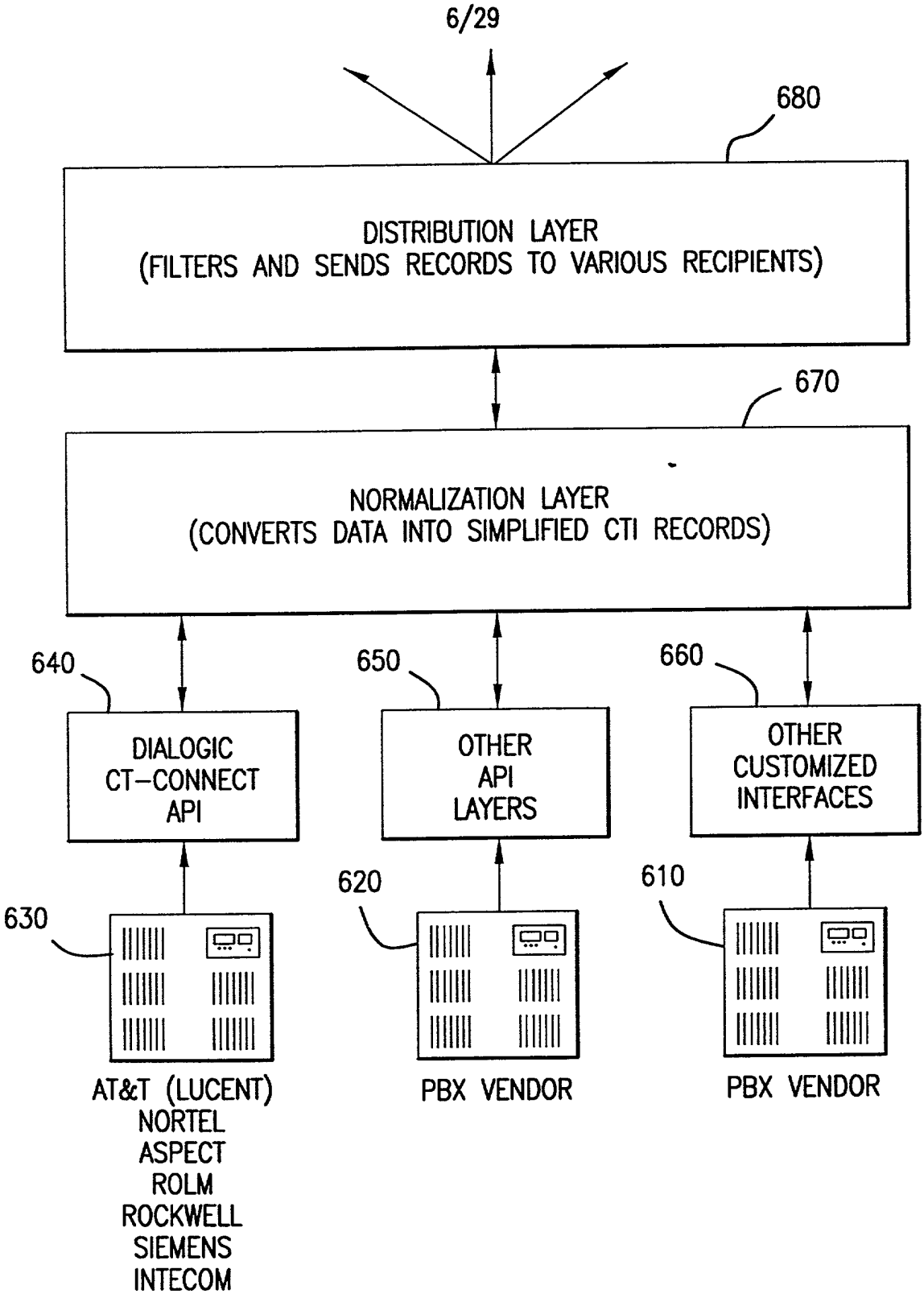

FIG.6

PD99-5558

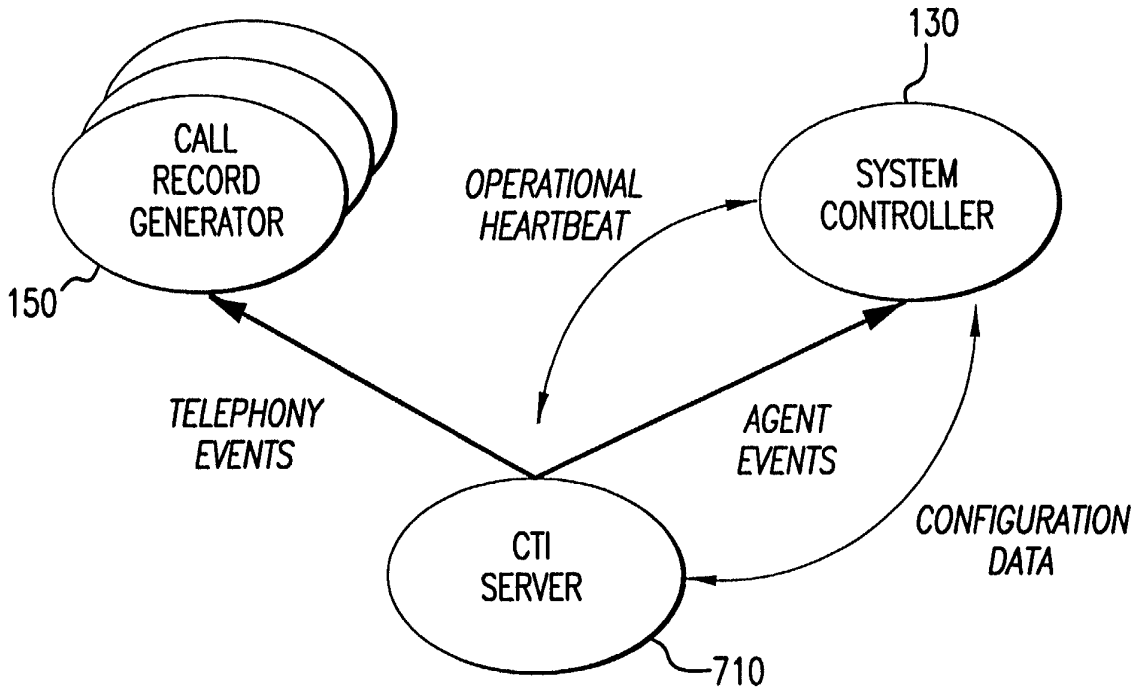
130
CALL
RECORD
GENERATOR
150
OPERATIONAL
HEARTBEAT
SYSTEM
CONTROLLER
TELEPHONY
EVENTS
AGENT
EVENTS
CONFIGURATION
DATA
CTI
SERVER
710

FIG.7

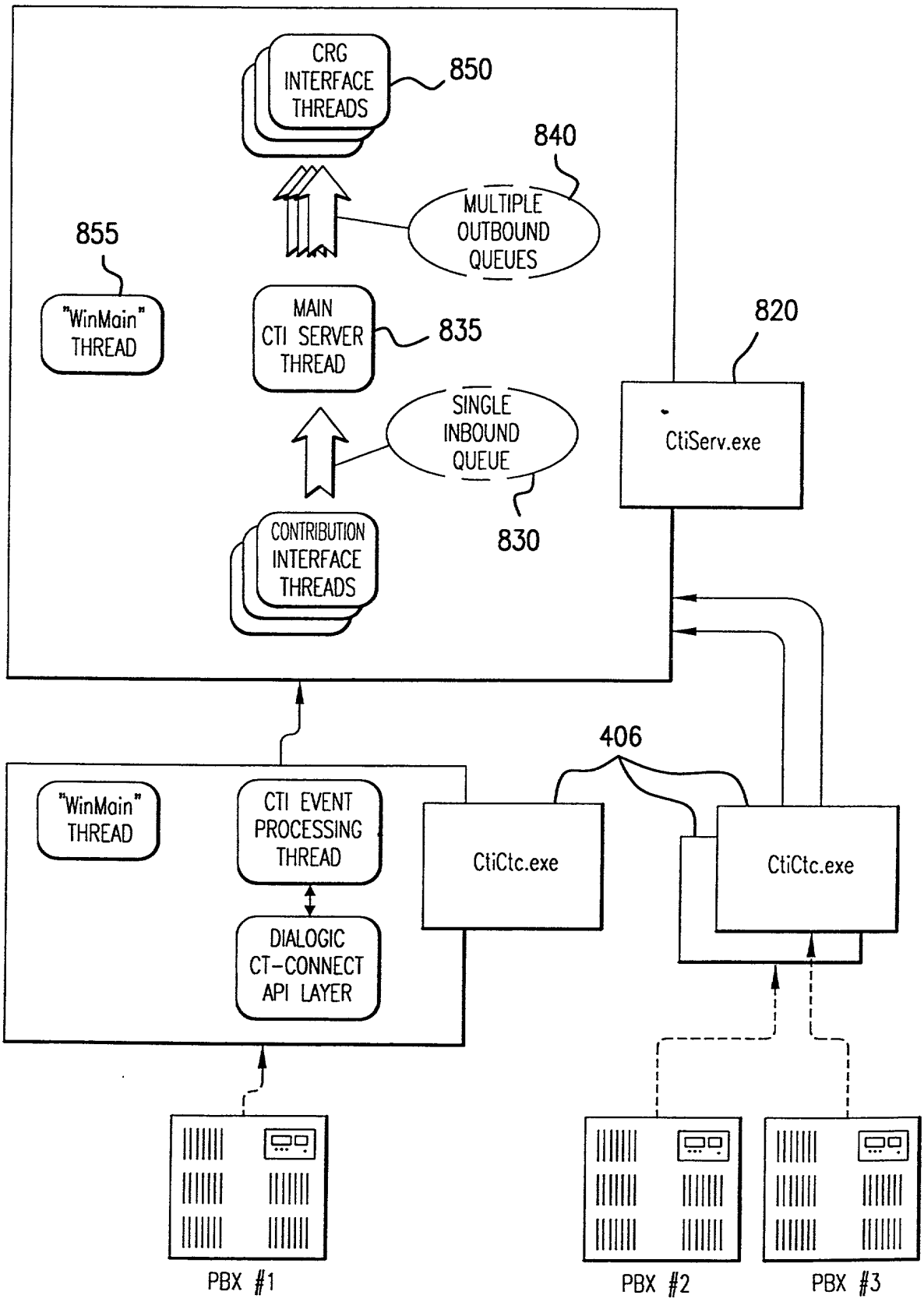
CRG INTERFACE THREADS
850
840
MULTIPLE OUTBOUND QUEUES
855
"WinMain" THREAD
MAIN CTI SERVER THREAD
835
820
SINGLE INBOUND QUEUE
CtiServ.exe
830
CONTRIBUTION INTERFACE THREADS
406
"WinMain" THREAD
CTI EVENT PROCESSING THREAD
CtiCtc.exe
CtiCtc.exe
DIALOGIC CT-CONNECT API LAYER
PBX #1
PBX #2
PBX #3

FIG.8

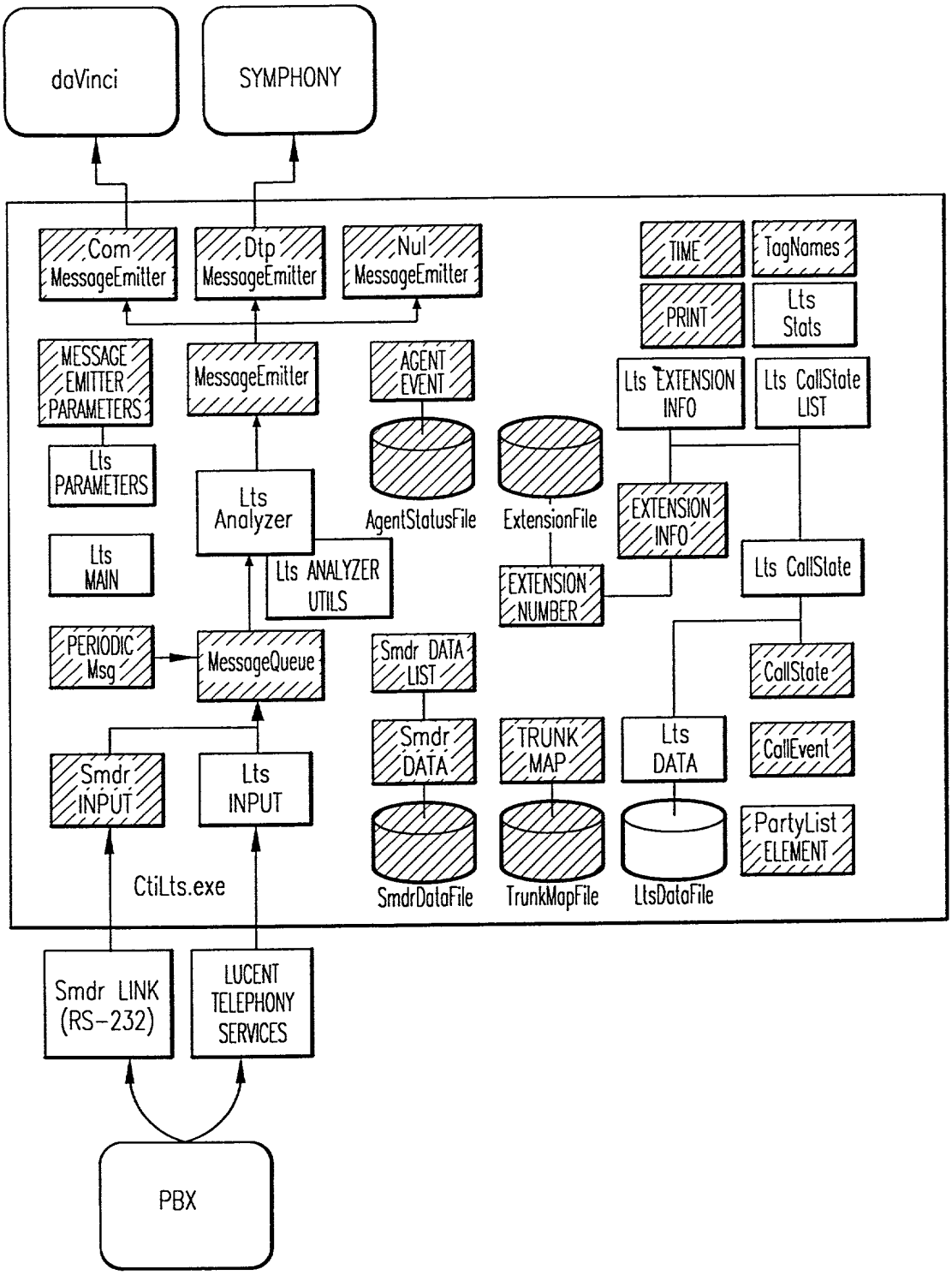
daVinci
SYMPHONY
Com MessageEmitter
Dtp MessageEmitter
Nul MessageEmitter
TIME
TagNames
PRINT
Lts Stats
MESSAGE EMITTER PARAMETERS
MessageEmitter
AGENT EVENT
Lts EXTENSION INFO
Lts CallState LIST
Lts PARAMETERS
Lts Analyzer
AgentStatusFile
ExtensionFile
EXTENSION INFO
Lts MAIN
Lts ANALYZER UTILS
EXTENSION NUMBER
Lts CallState
PERIODIC Msg
MessageQueue
Smdr DATA LIST
CallState
Smdr INPUT
Lts INPUT
Smdr DATA
TRUNK MAP
Lts DATA
CallEvent
PartyList ELEMENT
CtiLts.exe
SmdrDataFile
TrunkMapFile
LtsDataFile
Smdr LINK (RS-232)
LUCENT TELEPHONY SERVICES
PBX

FIG.9

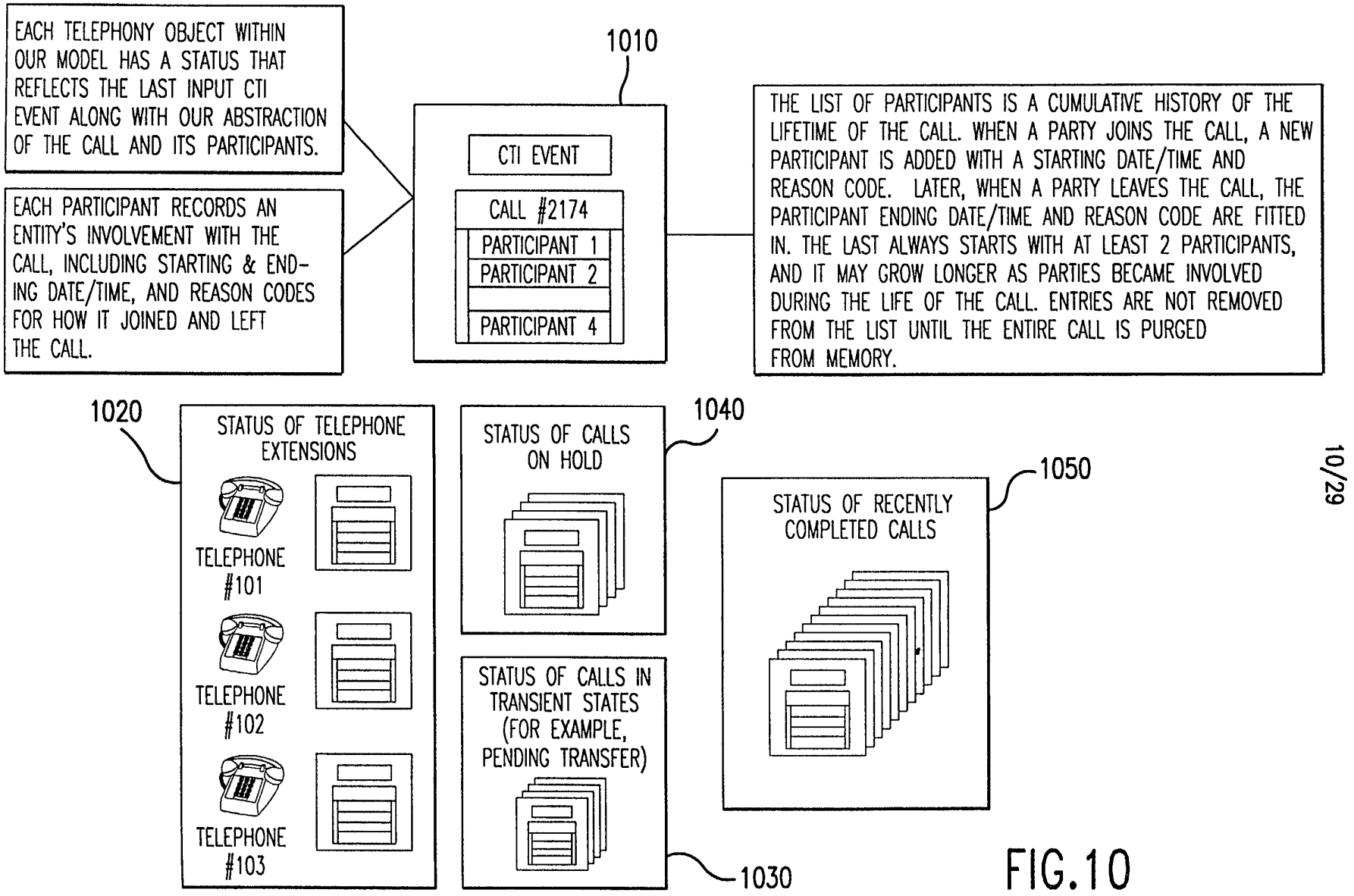
EACH TELEPHONY OBJECT WITHIN OUR MODEL HAS A STATUS THAT REFLECTS THE LAST INPUT CTI EVENT ALONG WITH OUR ABSTRACTION OF THE CALL AND ITS PARTICIPANTS.
EACH PARTICIPANT RECORDS AN ENTITY'S INVOLVEMENT WITH THE CALL, INCLUDING STARTING & ENDING DATE/TIME, AND REASON CODES FOR HOW IT JOINED AND LEFT THE CALL.
1010
CTI EVENT
CALL #2174
PARTICIPANT 1
PARTICIPANT 2
PARTICIPANT 4
THE LIST OF PARTICIPANTS IS A CUMULATIVE HISTORY OF THE LIFETIME OF THE CALL. WHEN A PARTY JOINS THE CALL, A NEW PARTICIPANT IS ADDED WITH A STARTING DATE/TIME AND REASON CODE. LATER, WHEN A PARTY LEAVES THE CALL, THE PARTICIPANT ENDING DATE/TIME AND REASON CODE ARE FITTED IN. THE LAST ALWAYS STARTS WITH AT LEAST 2 PARTICIPANTS, AND IT MAY GROW LONGER AS PARTIES BECAME INVOLVED DURING THE LIFE OF THE CALL. ENTRIES ARE NOT REMOVED FROM THE LIST UNTIL THE ENTIRE CALL IS PURGED FROM MEMORY.
1020
STATUS OF TELEPHONE EXTENSIONS
TELEPHONE #101
TELEPHONE #102
TELEPHONE #103
1040
STATUS OF CALLS ON HOLD
1050
STATUS OF RECENTLY COMPLETED CALLS
STATUS OF CALLS IN TRANSIENT STATES (FOR EXAMPLE, PENDING TRANSFER)
1030

FIG.10

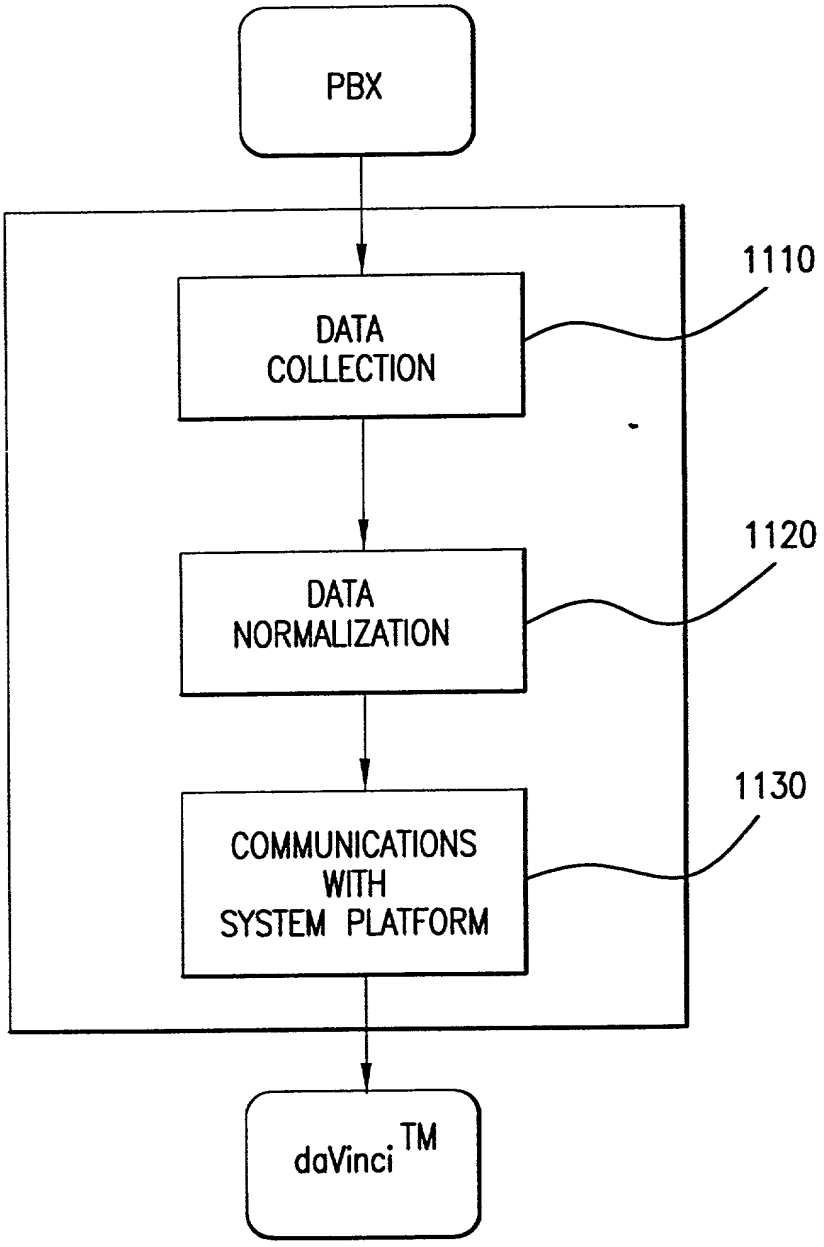
PBX
DATA COLLECTION
1110
DATA NORMALIZATION
1120
COMMUNICATIONS WITH SYSTEM PLATFORM
1130
daVinci TM

FIG.11

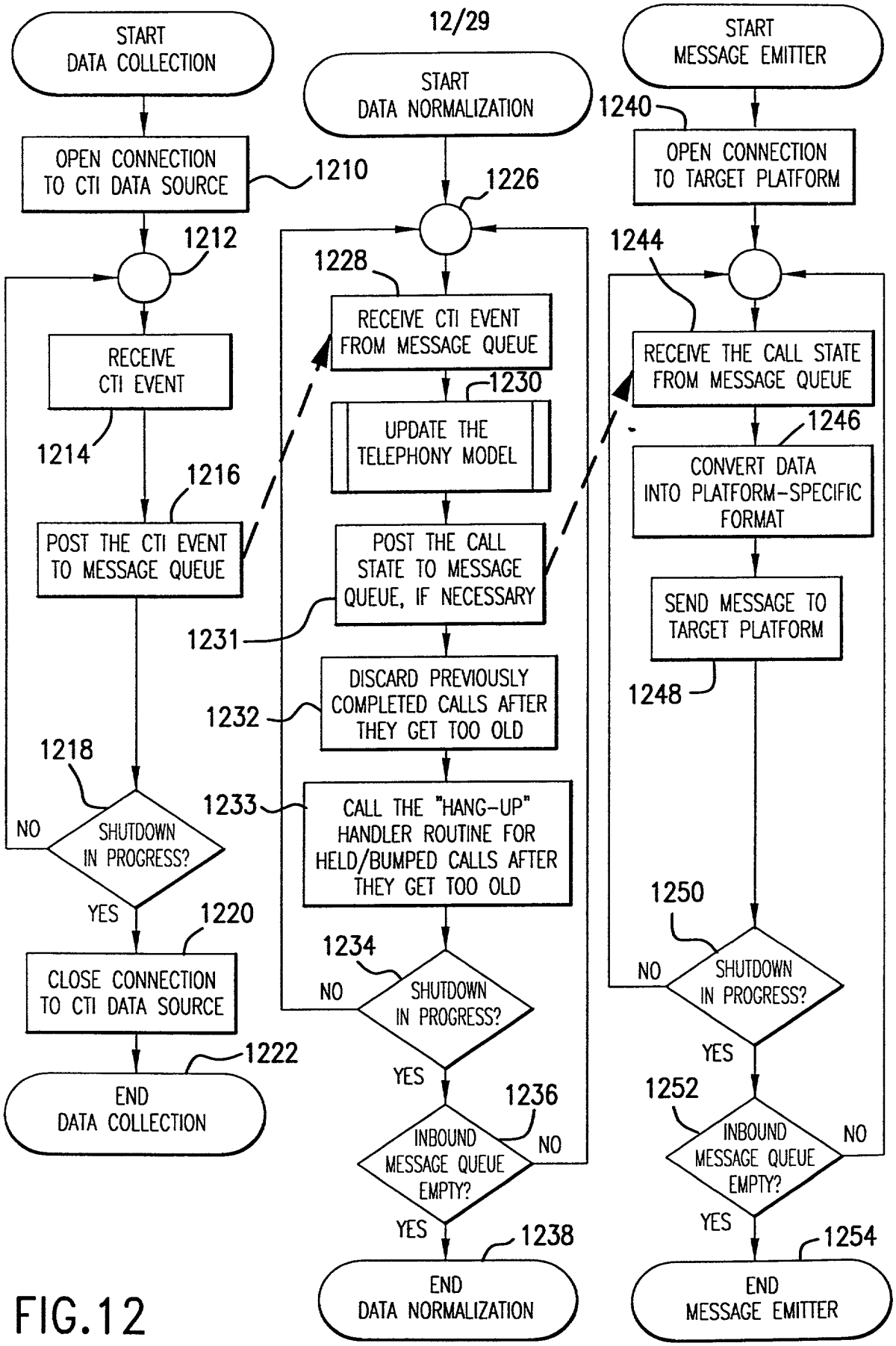
START DATA COLLECTION
OPEN CONNECTION TO CTI DATA SOURCE
1210
1212
RECEIVE CTI EVENT
1214
POST THE CTI EVENT TO MESSAGE QUEUE
1216
SHUTDOWN IN PROGRESS?
1218
NO
YES
CLOSE CONNECTION TO CTI DATA SOURCE
1220
END DATA COLLECTION
1222
START DATA NORMALIZATION
1226
RECEIVE CTI EVENT FROM MESSAGE QUEUE
1228
UPDATE THE TELEPHONY MODEL
1230
POST THE CALL STATE TO MESSAGE QUEUE, IF NECESSARY
1231
DISCARD PREVIOUSLY COMPLETED CALLS AFTER THEY GET TOO OLD
1232
CALL THE "HANG-UP" HANDLER ROUTINE FOR HELD/BUMPED CALLS AFTER THEY GET TOO OLD
1233
SHUTDOWN IN PROGRESS?
1234
NO
YES
INBOUND MESSAGE QUEUE EMPTY?
1236
NO
YES
END DATA NORMALIZATION
1238
START MESSAGE EMITTER
1240
OPEN CONNECTION TO TARGET PLATFORM
1244
RECEIVE THE CALL STATE FROM MESSAGE QUEUE
1246
CONVERT DATA INTO PLATFORM-SPECIFIC FORMAT
SEND MESSAGE TO TARGET PLATFORM
1248
SHUTDOWN IN PROGRESS?
1250
NO
YES
INBOUND MESSAGE QUEUE EMPTY?
1252
NO
YES
END MESSAGE EMITTER
1254

FIG.12

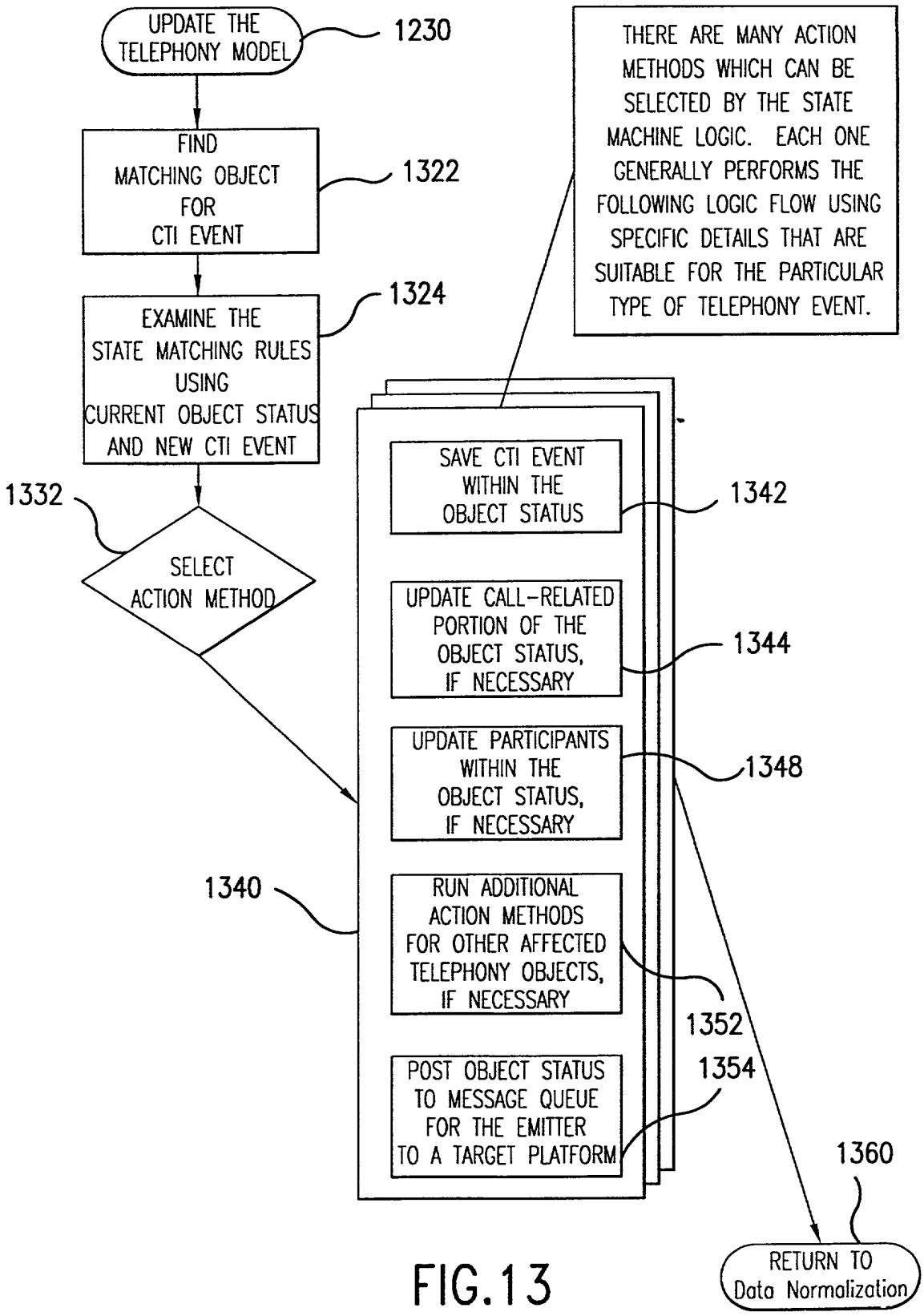

FIG.13

D95/55508-US0004

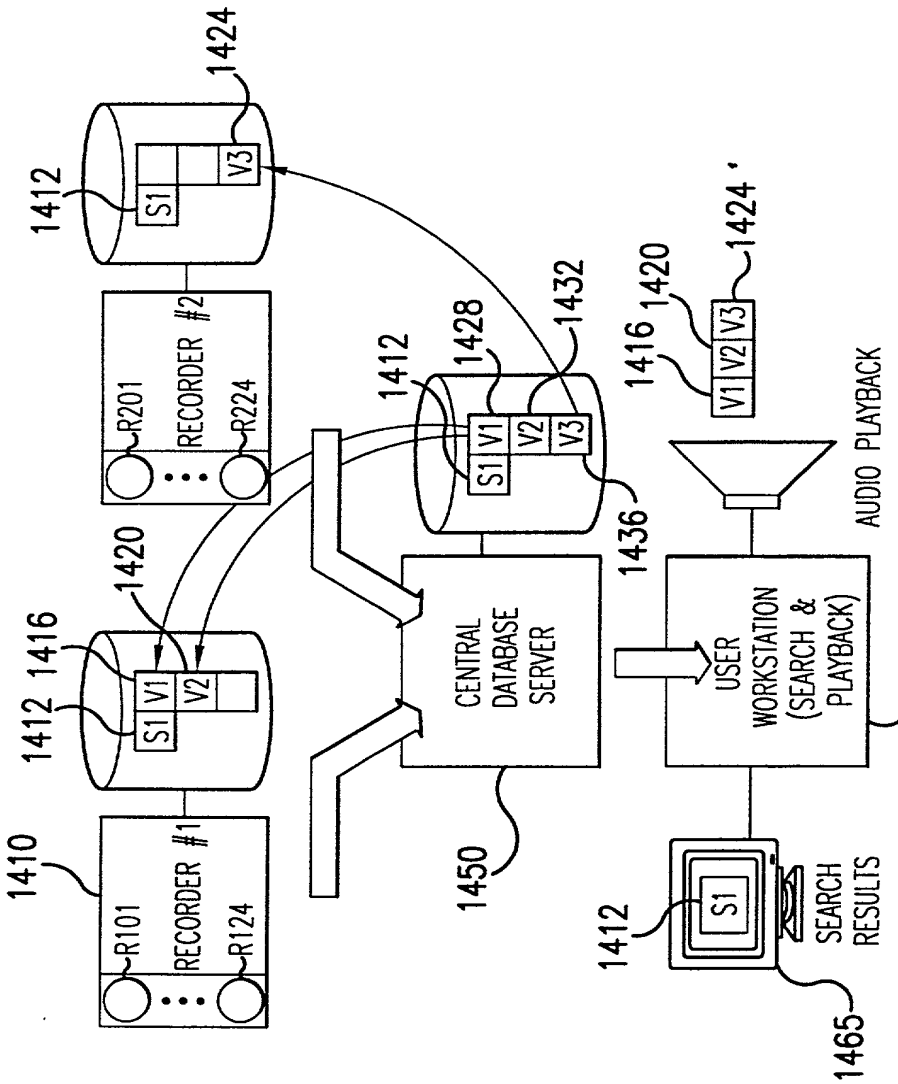
1424
1412
S1
V3
R201
RECORDER #2
R224
1420
1412
1416
S1
V1
V2
R101
RECORDER #1
R124
1410
1412
1428
1432
S1
V1
V2
V3
1436
CENTRAL DATABASE SERVER
1450
1416
1420
1424'
V1
V2
V3
AUDIO PLAYBACK
USER WORKSTATION (SEARCH & PLAYBACK)
1460
1412
S1
SEARCH RESULTS
1465

FIG. 14

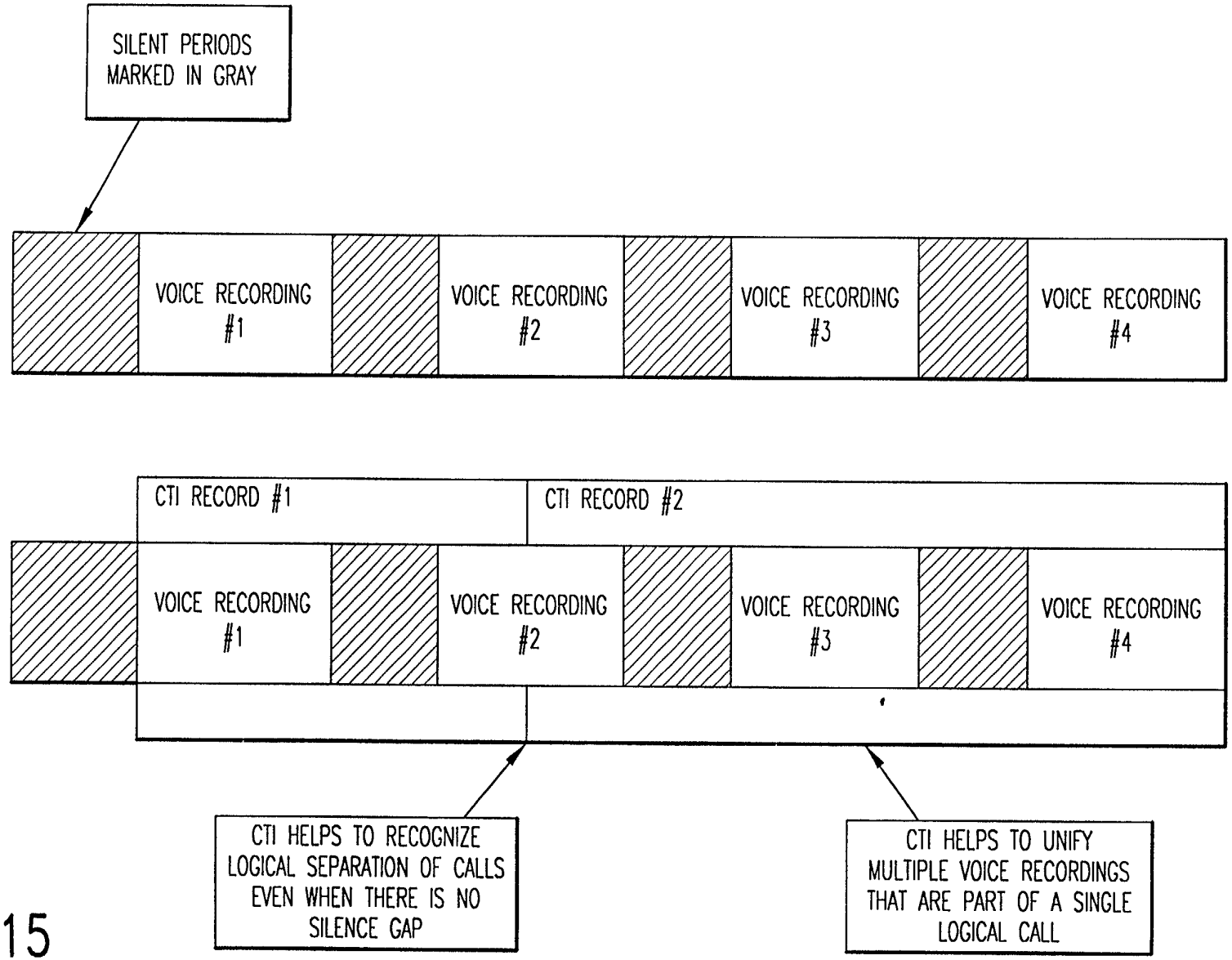
SILENT PERIODS MARKED IN GRAY
VOICE RECORDING #1
VOICE RECORDING #2
VOICE RECORDING #3
VOICE RECORDING #4
CTI RECORD #1
CTI RECORD #2
VOICE RECORDING #1
VOICE RECORDING #2
VOICE RECORDING #3
VOICE RECORDING #4
CTI HELPS TO RECOGNIZE LOGICAL SEPARATION OF CALLS EVEN WHEN THERE IS NO SILENCE GAP
CTI HELPS TO UNIFY MULTIPLE VOICE RECORDINGS THAT ARE PART OF A SINGLE LOGICAL CALL

FIG.15

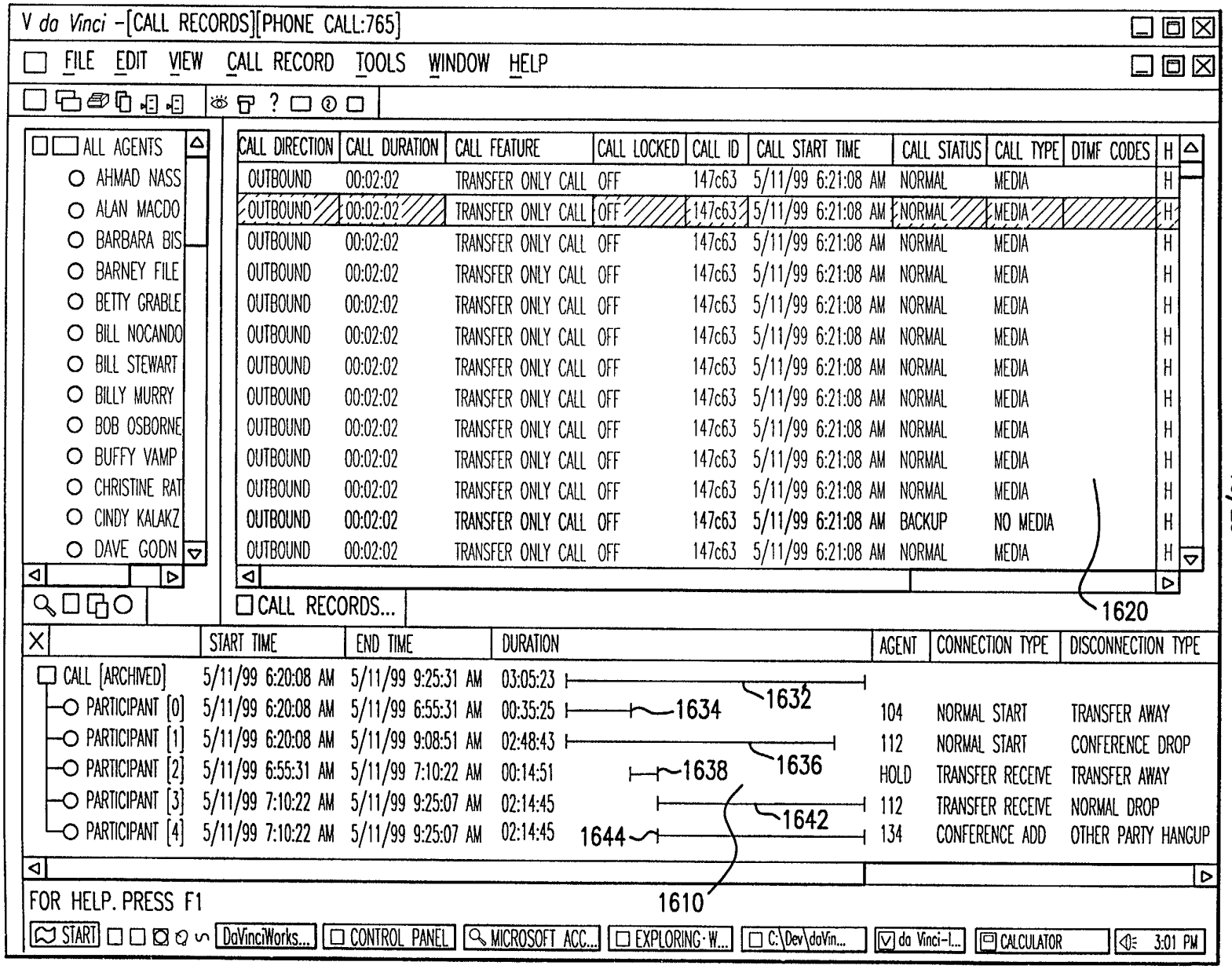
V da Vinci -[CALL RECORDS][PHONE CALL:765]
FILE EDIT VIEW CALL RECORD TOOLS WINDOW HELP
ALL AGENTS
AHMAD NASS
ALAN MACDO
BARBARA BIS
BARNEY FILE
BETTY GRABLE
BILL NOCANDO
BILL STEWART
BILLY MURRY
BOB OSBORNE
BUFFY VAMP
CHRISTINE RAT
CINDY KALAKZ
DAVE GODN
CALL DIRECTION | CALL DURATION | CALL FEATURE | CALL LOCKED | CALL ID | CALL START TIME | CALL STATUS | CALL TYPE | DTMF CODES | H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM BACKUP NO MEDIA H
OUTBOUND 00:02:02 TRANSFER ONLY CALL OFF 147c63 5/11/99 6:21:08 AM NORMAL MEDIA H
CALL RECORDS...
1620
START TIME | END TIME | DURATION | AGENT | CONNECTION TYPE | DISCONNECTION TYPE
CALL [ARCHIVED] 5/11/99 6:20:08 AM 5/11/99 9:25:31 AM 03:05:23
PARTICIPANT [0] 5/11/99 6:20:08 AM 5/11/99 6:55:31 AM 00:35:25 104 NORMAL START TRANSFER AWAY
PARTICIPANT [1] 5/11/99 6:20:08 AM 5/11/99 9:08:51 AM 02:48:43 112 NORMAL START CONFERENCE DROP
PARTICIPANT [2] 5/11/99 6:55:31 AM 5/11/99 7:10:22 AM 00:14:51 HOLD TRANSFER RECEIVE TRANSFER AWAY
PARTICIPANT [3] 5/11/99 7:10:22 AM 5/11/99 9:25:07 AM 02:14:45 112 TRANSFER RECEIVE NORMAL DROP
PARTICIPANT [4] 5/11/99 7:10:22 AM 5/11/99 9:25:07 AM 02:14:45 134 CONFERENCE ADD OTHER PARTY HANGUP
1632
1634
1636
1638
1642
1644
1610
FOR HELP. PRESS F1
START
DaVinciWorks...
CONTROL PANEL
MICROSOFT ACC...
EXPLORING-W...
C:\Dev\daVin...
da Vinci-I...
CALCULATOR
3:01 PM

FIG.16

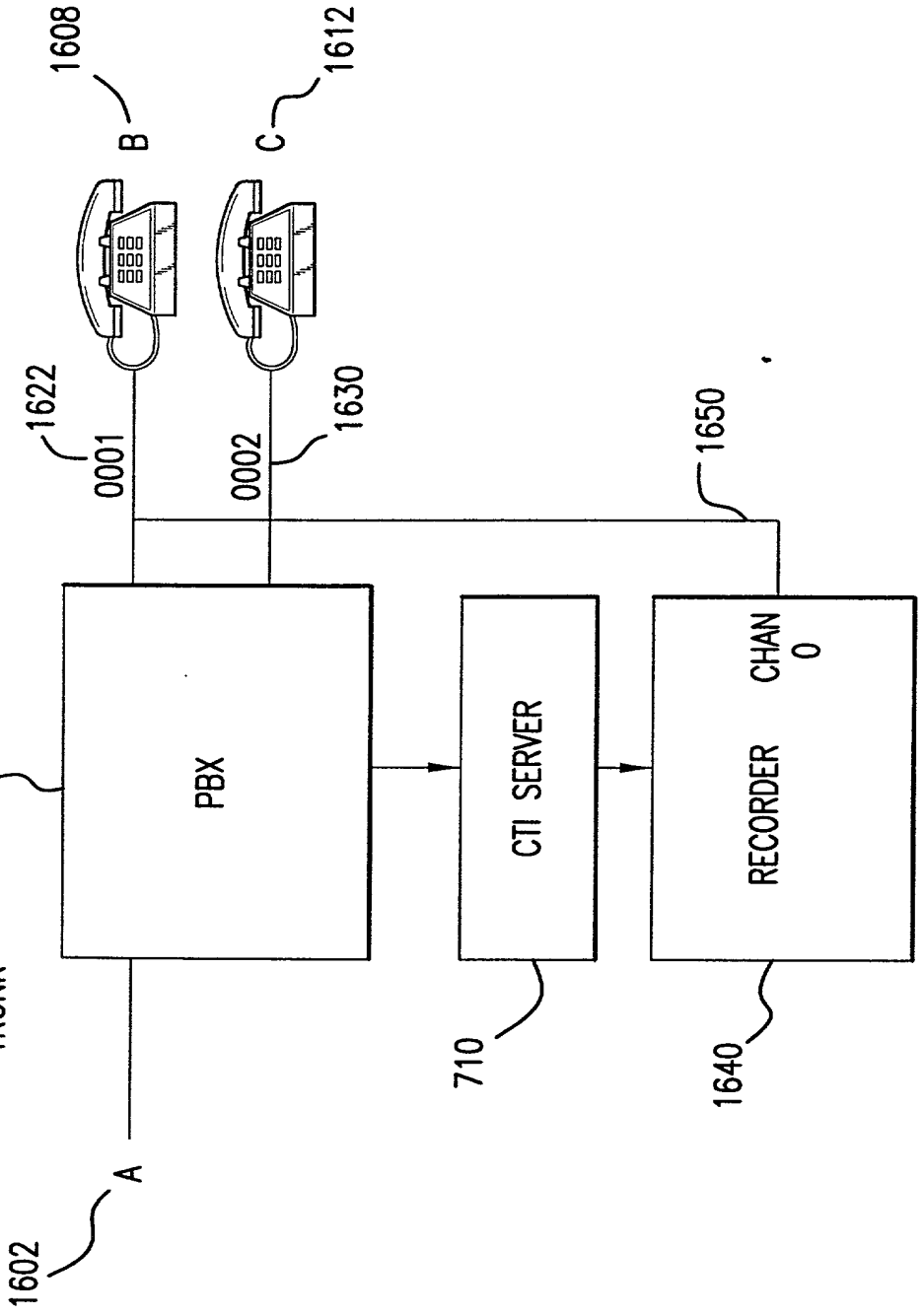
1608
B
1612
C
STATION/EXTENSION
1622
0001
0002
1630
1650
100
PBX
CTI SERVER
CHAN 0
RECORDER
TRUNK
710
1640
1602
A

FIG.16A

T08090 "8569/860

AgentId	EXTENSION	LOCATION	START TIME	END TIME	CONNECT REASON	DISCONNECT REASON
A		EXTERNAL	t_1	t_7	NORM START	NORM DROP
B	0001	INTERNAL	t_1	t_4	NORM START	Xfr AWAY
HOLD		INTERNAL	t_4	t_6	Xfr Rec	Xfr AWAY
C	0002	INTERNAL	t_6	t_7	Xfr Rec	OTHER PARTY HANGUP

FIG.16B

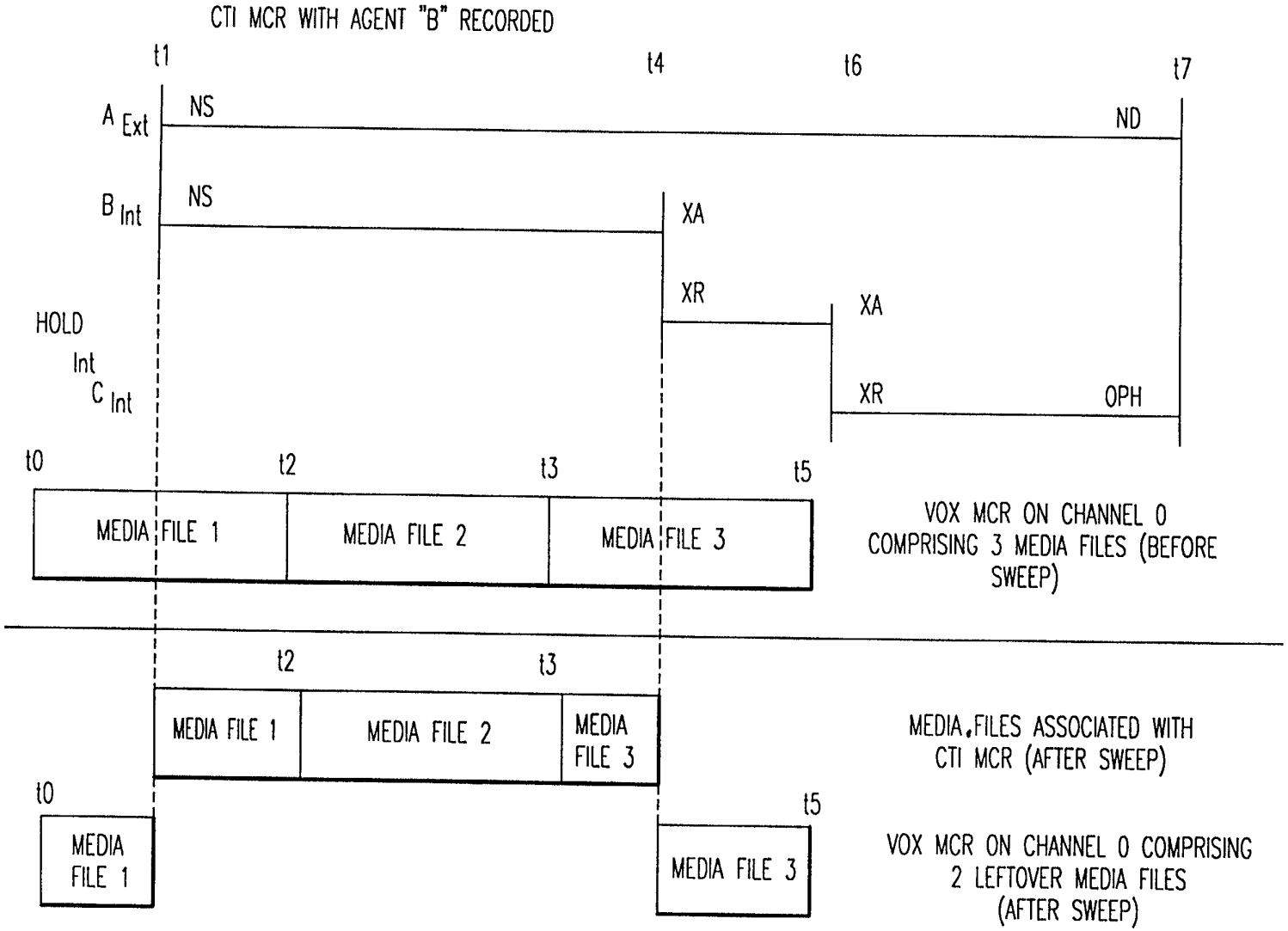
CTI MCR WITH AGENT "B" RECORDED
t1
t4
t6
t7
A Ext
NS
ND
B Int
NS
XA
XR
XA
HOLD
Int
C Int
XR
OPH
t0
t2
t3
t5
MEDIA FILE 1
MEDIA FILE 2
MEDIA FILE 3
VOX MCR ON CHANNEL 0 COMPRISING 3 MEDIA FILES (BEFORE SWEEP)
t2
t3
MEDIA FILE 1
MEDIA FILE 2
MEDIA FILE 3
MEDIA FILES ASSOCIATED WITH CTI MCR (AFTER SWEEP)
t0
t5
MEDIA FILE 1
MEDIA FILE 3
VOX MCR ON CHANNEL 0 COMPRISING 2 LEFTOVER MEDIA FILES (AFTER SWEEP)

FIG.17

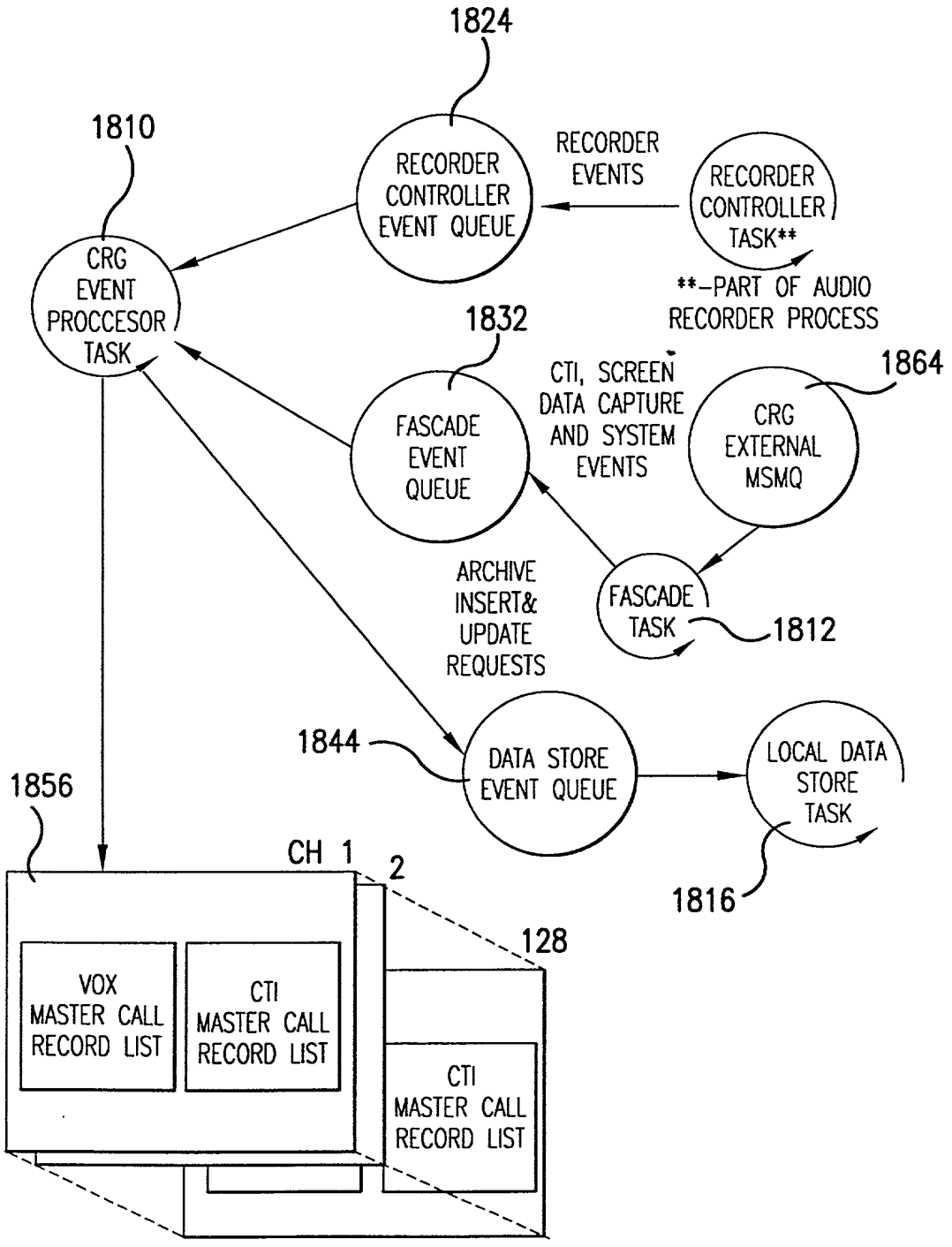
1824
1810
RECORDER CONTROLLER EVENT QUEUE
RECORDER EVENTS
RECORDER CONTROLLER TASK**
**–PART OF AUDIO RECORDER PROCESS
CRG EVENT PROCCESOR TASK
1832
FASCADE EVENT QUEUE
CTI, SCREEN DATA CAPTURE AND SYSTEM EVENTS
1864
CRG EXTERNAL MSMQ
ARCHIVE INSERT& UPDATE REQUESTS
FASCADE TASK
1812
1844
DATA STORE EVENT QUEUE
LOCAL DATA STORE TASK
1816
1856
CH 1
2
128
VOX MASTER CALL RECORD LIST
CTI MASTER CALL RECORD LIST
CTI MASTER CALL RECORD LIST

FIG. 18

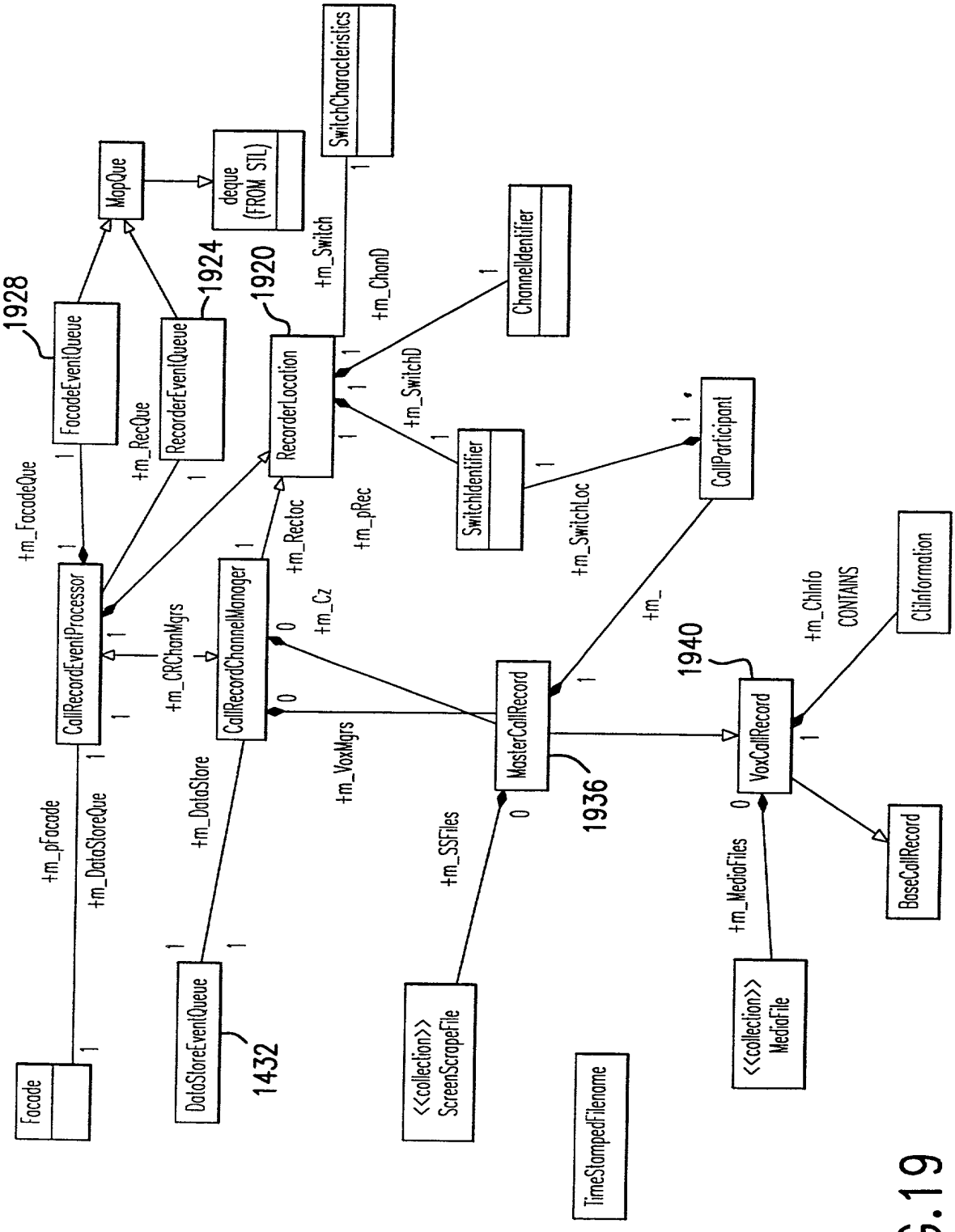
Facade
CallRecordEventProcessor
FacadeEventQueue
RecorderEventQueue
MapQue
deque (FROM STL)
SwitchCharacteristics
RecorderLocation
ChannelIdentifier
SwitchIdentifier
CallParticipant
CallRecordChannelManager
DataStoreEventQueue
MasterCallRecord
VoxCallRecord
CtlInformation
BaseCallRecord
<<collection>> ScreenScrapeFile
<<collection>> MediaFile
TimeStampedFilename
+m_pFacade
+m_DataStoreQue
+m_FacadeQue
+m_RecQue
+m_CRChanMgrs
+m_DataStore
+m_RecToc
+m_Cz
+m_VoxMgrs
+m_pRec
+m_Switch
+m_ChanD
+m_SwitchD
+m_SwitchLoc
+m_SSFiles
+m_MediaFiles
+m_ChInfo
CONTAINS
1928
1924
1920
1432
1936
1940

FIG. 19

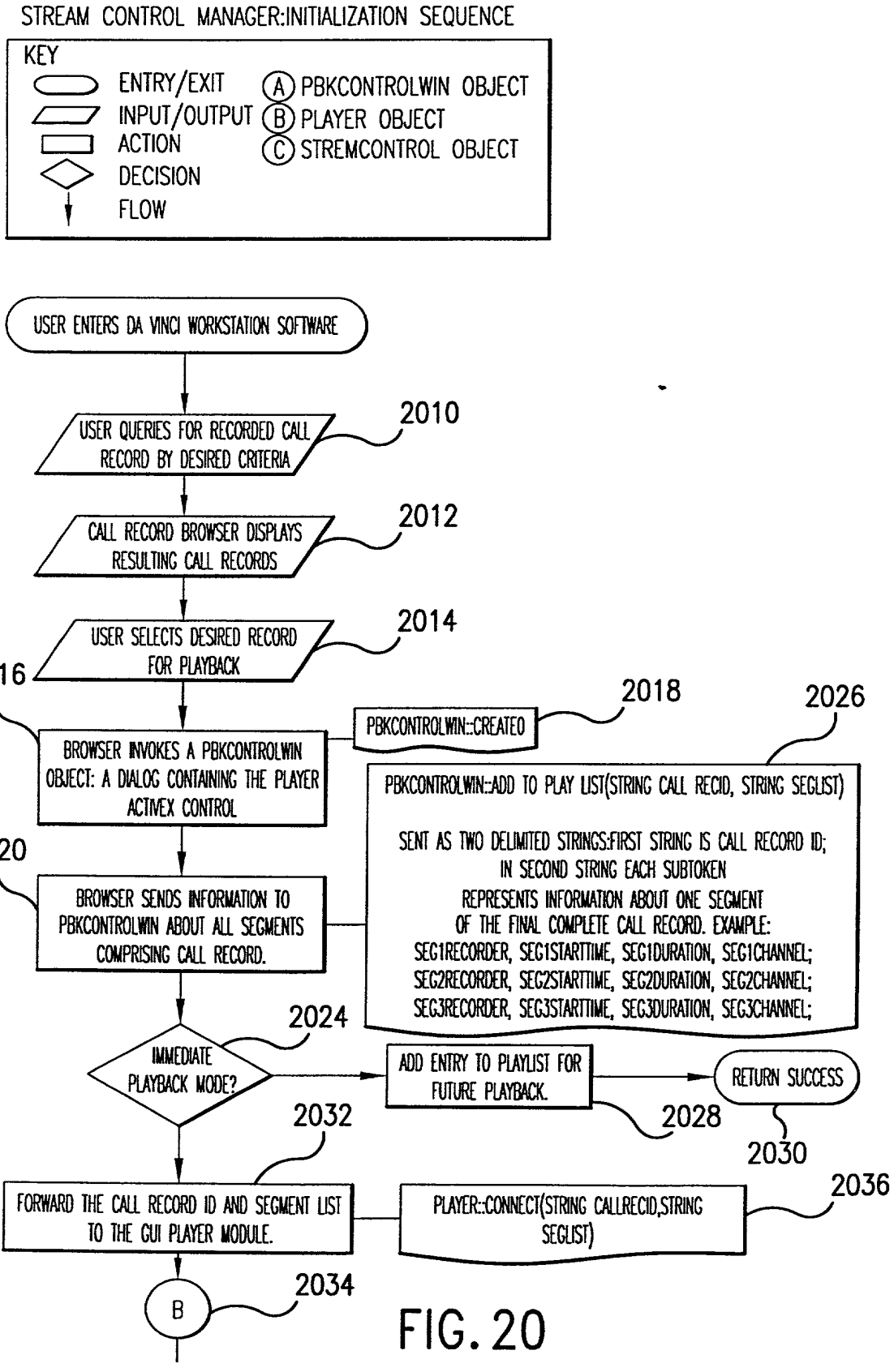
STREAM CONTROL MANAGER:INITIALIZATION SEQUENCE
KEY
ENTRY/EXIT
INPUT/OUTPUT
ACTION
DECISION
FLOW
A PBKCONTROLWIN OBJECT
B PLAYER OBJECT
C STREMCONTROL OBJECT
USER ENTERS DA VINCI WORKSTATION SOFTWARE
USER QUERIES FOR RECORDED CALL RECORD BY DESIRED CRITERIA
2010
CALL RECORD BROWSER DISPLAYS RESULTING CALL RECORDS
2012
USER SELECTS DESIRED RECORD FOR PLAYBACK
2014
2016
BROWSER INVOKES A PBKCONTROLWIN OBJECT: A DIALOG CONTAINING THE PLAYER ACTIVEX CONTROL
PBKCONTROLWIN::CREATEO
2018
2026
PBKCONTROLWIN::ADD TO PLAY LIST(STRING CALL RECID, STRING SEGLIST)
SENT AS TWO DELIMITED STRINGS:FIRST STRING IS CALL RECORD ID;
IN SECOND STRING EACH SUBTOKEN
REPRESENTS INFORMATION ABOUT ONE SEGMENT
OF THE FINAL COMPLETE CALL RECORD. EXAMPLE:
SEG1RECORDER, SEG1STARTTIME, SEG1DURATION, SEG1CHANNEL;
SEG2RECORDER, SEG2STARTTIME, SEG2DURATION, SEG2CHANNEL;
SEG3RECORDER, SEG3STARTTIME, SEG3DURATION, SEG3CHANNEL;
2020
BROWSER SENDS INFORMATION TO PBKCONTROLWIN ABOUT ALL SEGMENTS COMPRISING CALL RECORD.
2024
IMMEDIATE PLAYBACK MODE?
ADD ENTRY TO PLAYLIST FOR FUTURE PLAYBACK.
2028
RETURN SUCCESS
2030
2032
FORWARD THE CALL RECORD ID AND SEGMENT LIST TO THE GUI PLAYER MODULE.
PLAYER::CONNECT(STRING CALLRECID,STRING SEGLIST)
2036
B
2034

FIG. 20

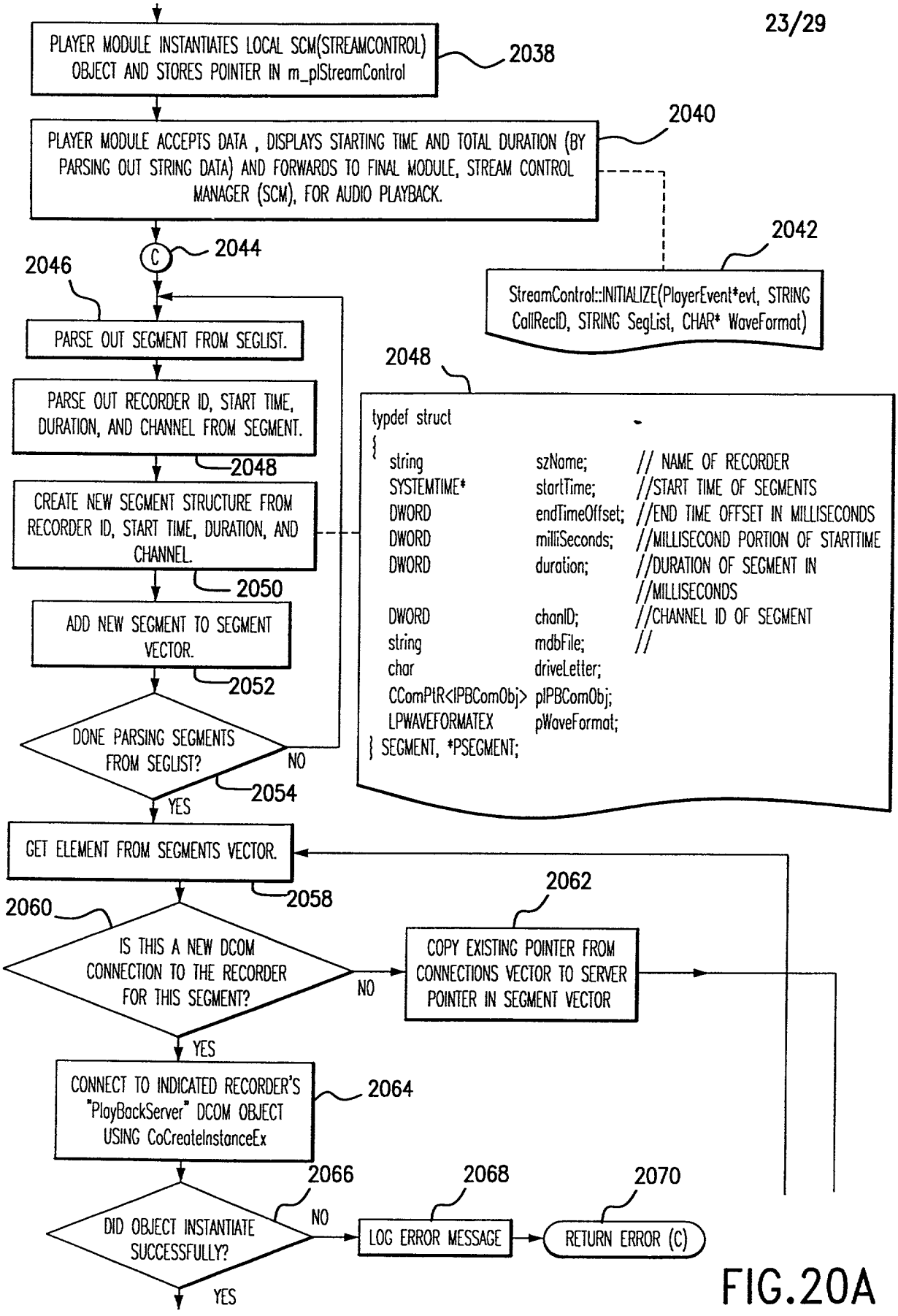
PLAYER MODULE INSTANTIATES LOCAL SCM(STREAMCONTROL) OBJECT AND STORES POINTER IN m_plStreamControl
2038
PLAYER MODULE ACCEPTS DATA , DISPLAYS STARTING TIME AND TOTAL DURATION (BY PARSING OUT STRING DATA) AND FORWARDS TO FINAL MODULE, STREAM CONTROL MANAGER (SCM), FOR AUDIO PLAYBACK.
2040
C
2044
2046
StreamControl::INITIALIZE(PlayerEvent*evt, STRING CallRecID, STRING SegList, CHAR* WaveFormat)
2042
PARSE OUT SEGMENT FROM SEGLIST.
PARSE OUT RECORDER ID, START TIME, DURATION, AND CHANNEL FROM SEGMENT.
2048
CREATE NEW SEGMENT STRUCTURE FROM RECORDER ID, START TIME, DURATION, AND CHANNEL.
2050
ADD NEW SEGMENT TO SEGMENT VECTOR.
2052
DONE PARSING SEGMENTS FROM SEGLIST?
NO
2054
YES
2048
typdef struct
{
string szName; // NAME OF RECORDER
SYSTEMTIME* startTime; //START TIME OF SEGMENTS
DWORD endTimeOffset; //END TIME OFFSET IN MILLISECONDS
DWORD milliSeconds; //MILLISECOND PORTION OF STARTTIME
DWORD duration; //DURATION OF SEGMENT IN //MILLISECONDS
DWORD chanID; //CHANNEL ID OF SEGMENT
string mdbFile; //
char driveLetter;
CComPtR<IPBComObj> plPBComObj;
LPWAVEFORMATEX pWaveFormat;
} SEGMENT, *PSEGMENT;
GET ELEMENT FROM SEGMENTS VECTOR.
2058
2060
IS THIS A NEW DCOM CONNECTION TO THE RECORDER FOR THIS SEGMENT?
NO
2062
COPY EXISTING POINTER FROM CONNECTIONS VECTOR TO SERVER POINTER IN SEGMENT VECTOR
YES
CONNECT TO INDICATED RECORDER'S "PlayBackServer" DCOM OBJECT USING CoCreateInstanceEx
2064
2066
DID OBJECT INSTANTIATE SUCCESSFULLY?
NO
2068
LOG ERROR MESSAGE
2070
RETURN ERROR (C)
YES

FIG.20A

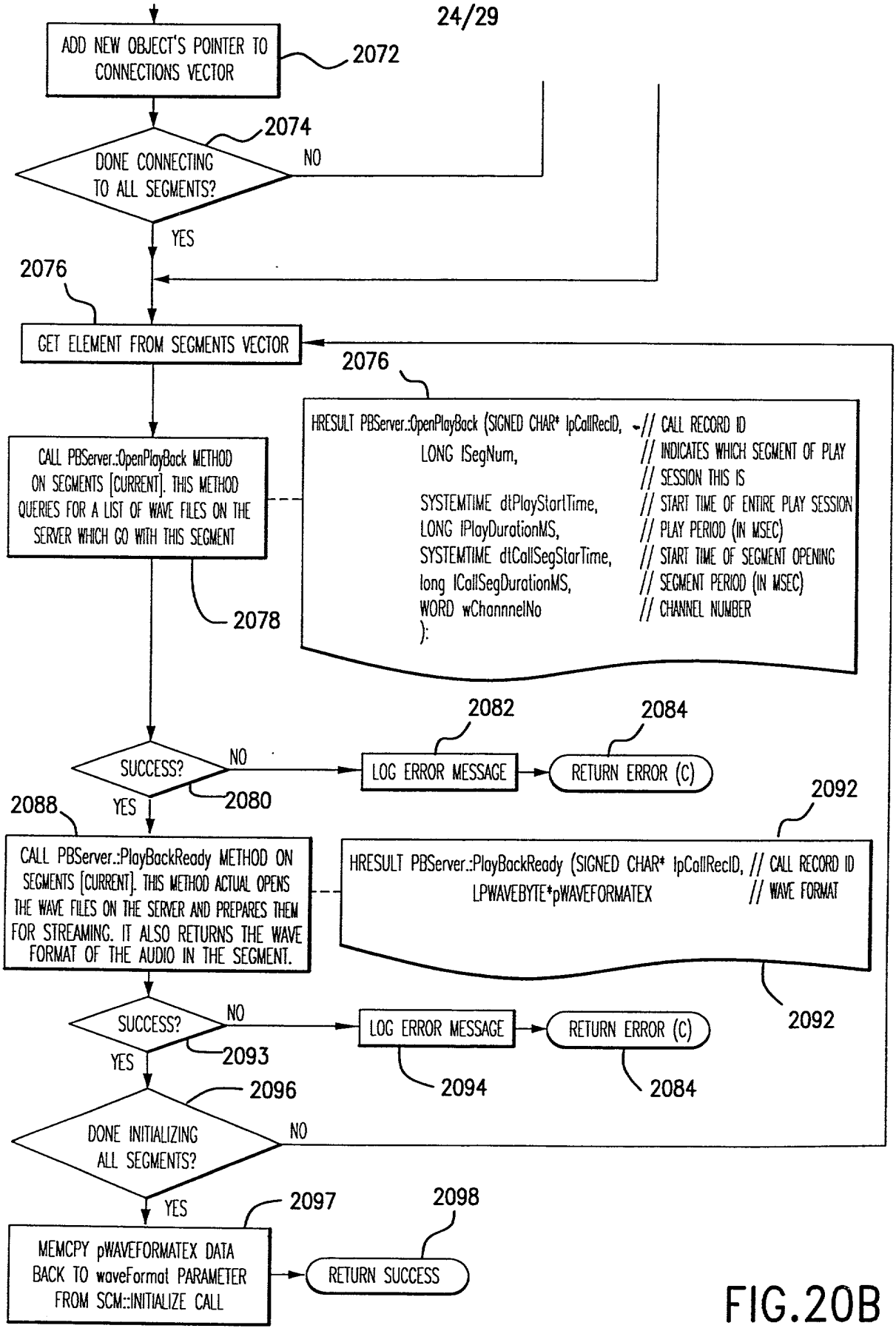
ADD NEW OBJECT'S POINTER TO CONNECTIONS VECTOR
2072
2074
DONE CONNECTING TO ALL SEGMENTS?
NO
YES
2076
GET ELEMENT FROM SEGMENTS VECTOR
2076
HRESULT PBServer::OpenPlayBack (SIGNED CHAR* lpCallRecID, // CALL RECORD ID
LONG lSegNum, // INDICATES WHICH SEGMENT OF PLAY // SESSION THIS IS
SYSTEMTIME dtPlayStartTime, // START TIME OF ENTIRE PLAY SESSION
LONG lPlayDurationMS, // PLAY PERIOD (IN MSEC)
SYSTEMTIME dtCallSegStarTime, // START TIME OF SEGMENT OPENING
long lCallSegDurationMS, // SEGMENT PERIOD (IN MSEC)
WORD wChannnelNo // CHANNEL NUMBER
);
CALL PBServer::OpenPlayBack METHOD ON SEGMENTS [CURRENT]. THIS METHOD QUERIES FOR A LIST OF WAVE FILES ON THE SERVER WHICH GO WITH THIS SEGMENT
2078
2082
2084
SUCCESS?
NO
2080
LOG ERROR MESSAGE
RETURN ERROR (C)
YES
2088
2092
CALL PBServer::PlayBackReady METHOD ON SEGMENTS [CURRENT]. THIS METHOD ACTUAL OPENS THE WAVE FILES ON THE SERVER AND PREPARES THEM FOR STREAMING. IT ALSO RETURNS THE WAVE FORMAT OF THE AUDIO IN THE SEGMENT.
HRESULT PBServer::PlayBackReady (SIGNED CHAR* lpCallRecID, // CALL RECORD ID
LPWAVEBYTE*pWAVEFORMATEX // WAVE FORMAT
2092
SUCCESS?
NO
2093
LOG ERROR MESSAGE
RETURN ERROR (C)
YES
2094
2084
2096
DONE INITIALIZING ALL SEGMENTS?
NO
YES
2097
2098
MEMCPY pWAVEFORMATEX DATA BACK TO waveFormat PARAMETER FROM SCM::INITIALIZE CALL
RETURN SUCCESS

FIG.20B

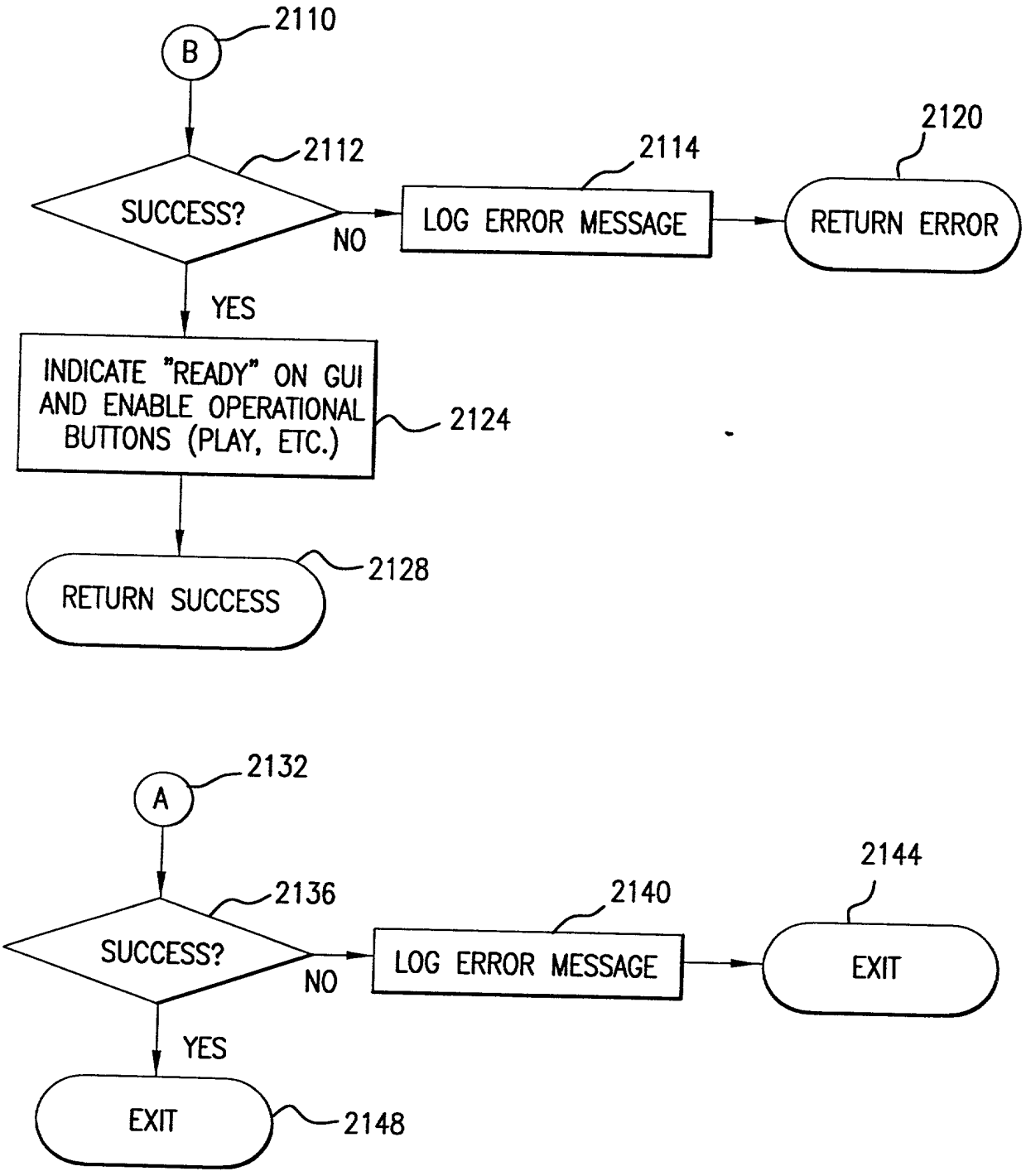
B
2110
2112
SUCCESS?
NO
2114
LOG ERROR MESSAGE
2120
RETURN ERROR
YES
INDICATE "READY" ON GUI AND ENABLE OPERATIONAL BUTTONS (PLAY, ETC.)
2124
RETURN SUCCESS
2128
A
2132
2136
SUCCESS?
NO
2140
LOG ERROR MESSAGE
2144
EXIT
YES
EXIT
2148

FIG.21

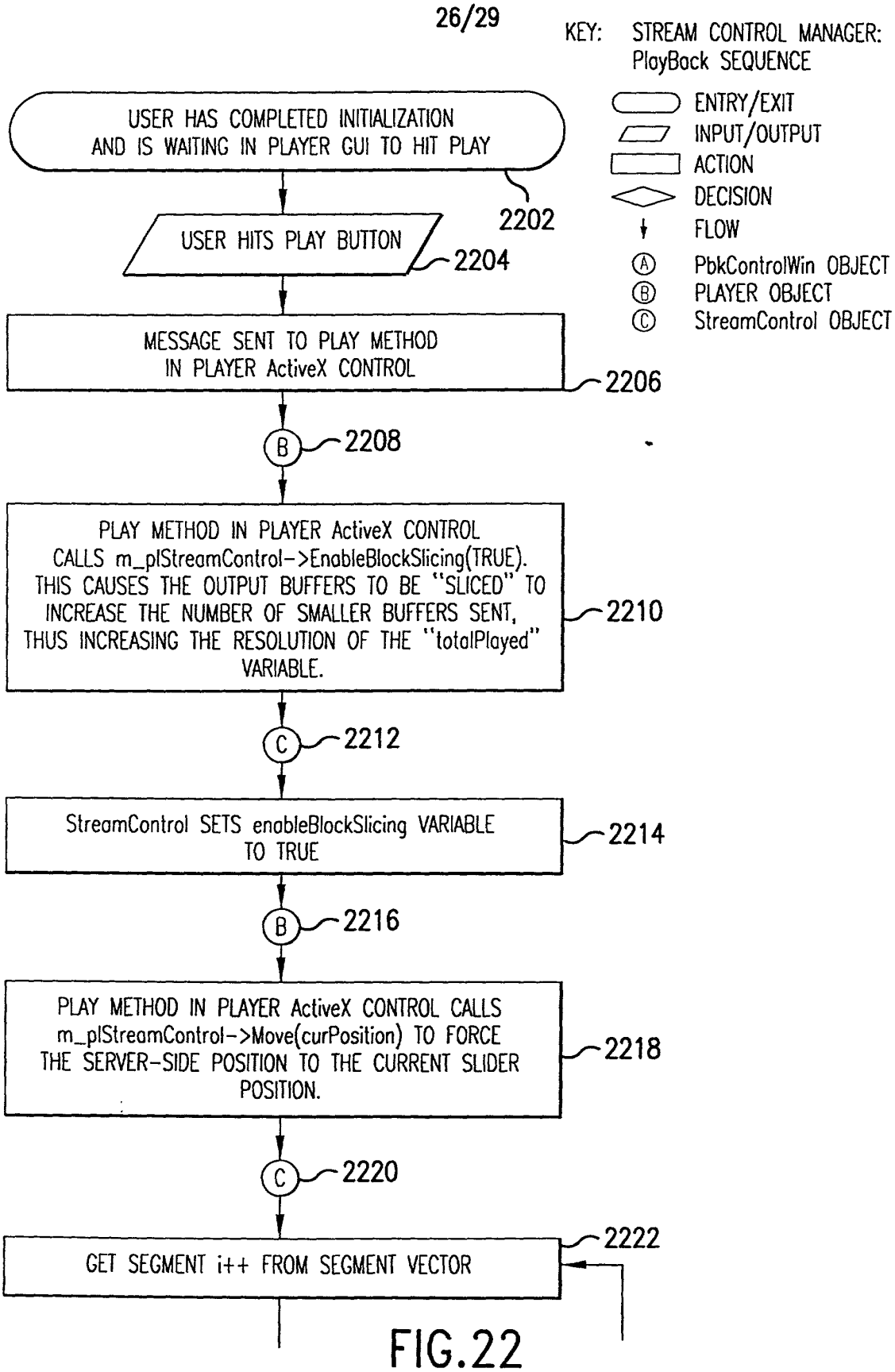

FIG.22

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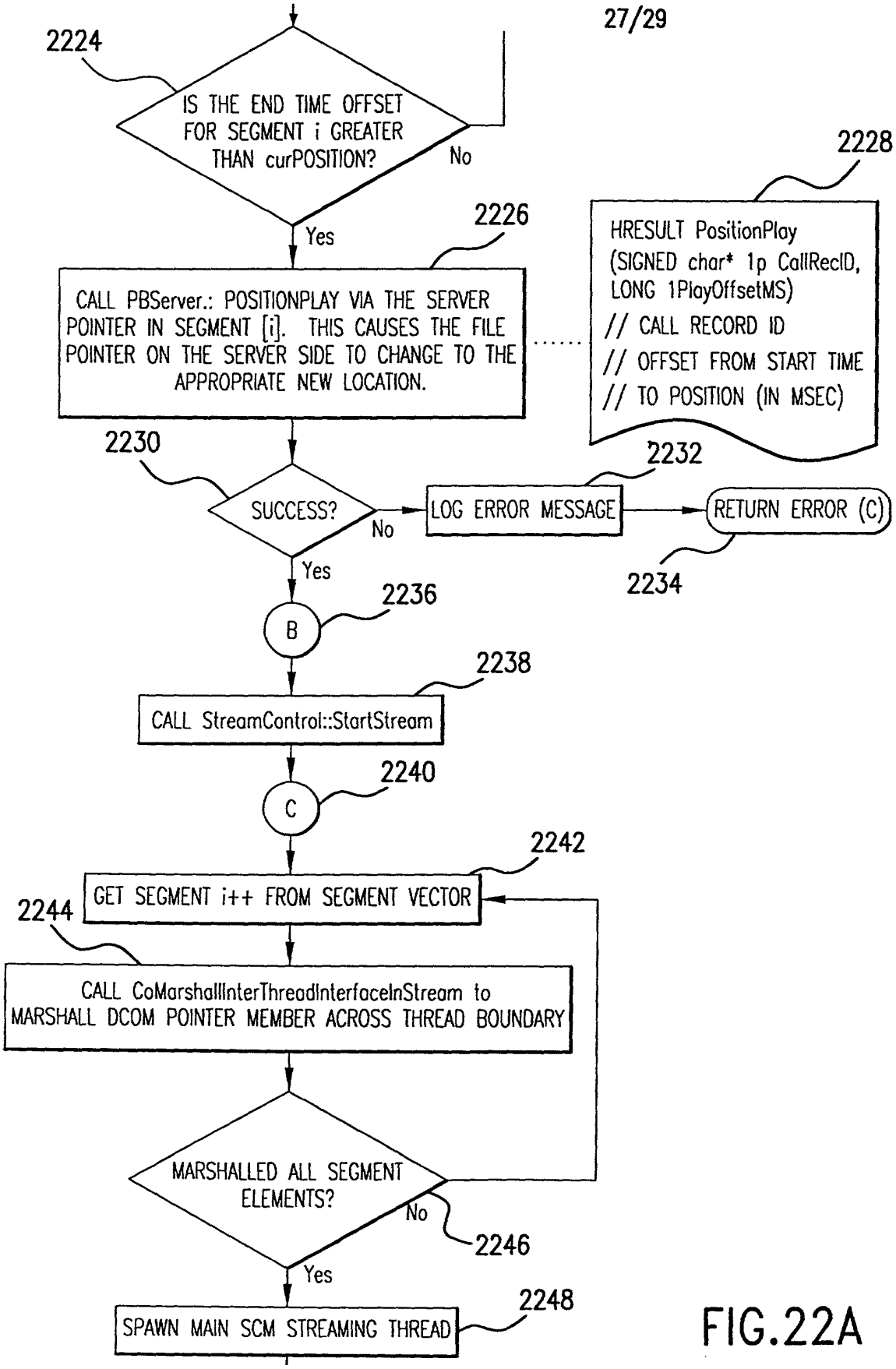
2224
IS THE END TIME OFFSET FOR SEGMENT i GREATER THAN curPOSITION?
No
Yes
2226
CALL PBServer.: POSITIONPLAY VIA THE SERVER POINTER IN SEGMENT [i]. THIS CAUSES THE FILE POINTER ON THE SERVER SIDE TO CHANGE TO THE APPROPRIATE NEW LOCATION.
2228
HRESULT PositionPlay
(SIGNED char* 1p CallRecID,
LONG 1PlayOffsetMS)
// CALL RECORD ID
// OFFSET FROM START TIME
// TO POSITION (IN MSEC)
2230
SUCCESS?
No
2232
LOG ERROR MESSAGE
RETURN ERROR (C)
2234
Yes
2236
B
2238
CALL StreamControl::StartStream
2240
C
2242
GET SEGMENT i++ FROM SEGMENT VECTOR
2244
CALL CoMarshalInterThreadInterfaceInStream to MARSHALL DCOM POINTER MEMBER ACROSS THREAD BOUNDARY
MARSHALLED ALL SEGMENT ELEMENTS?
No
2246
Yes
2248
SPAWN MAIN SCM STREAMING THREAD

FIG.22A

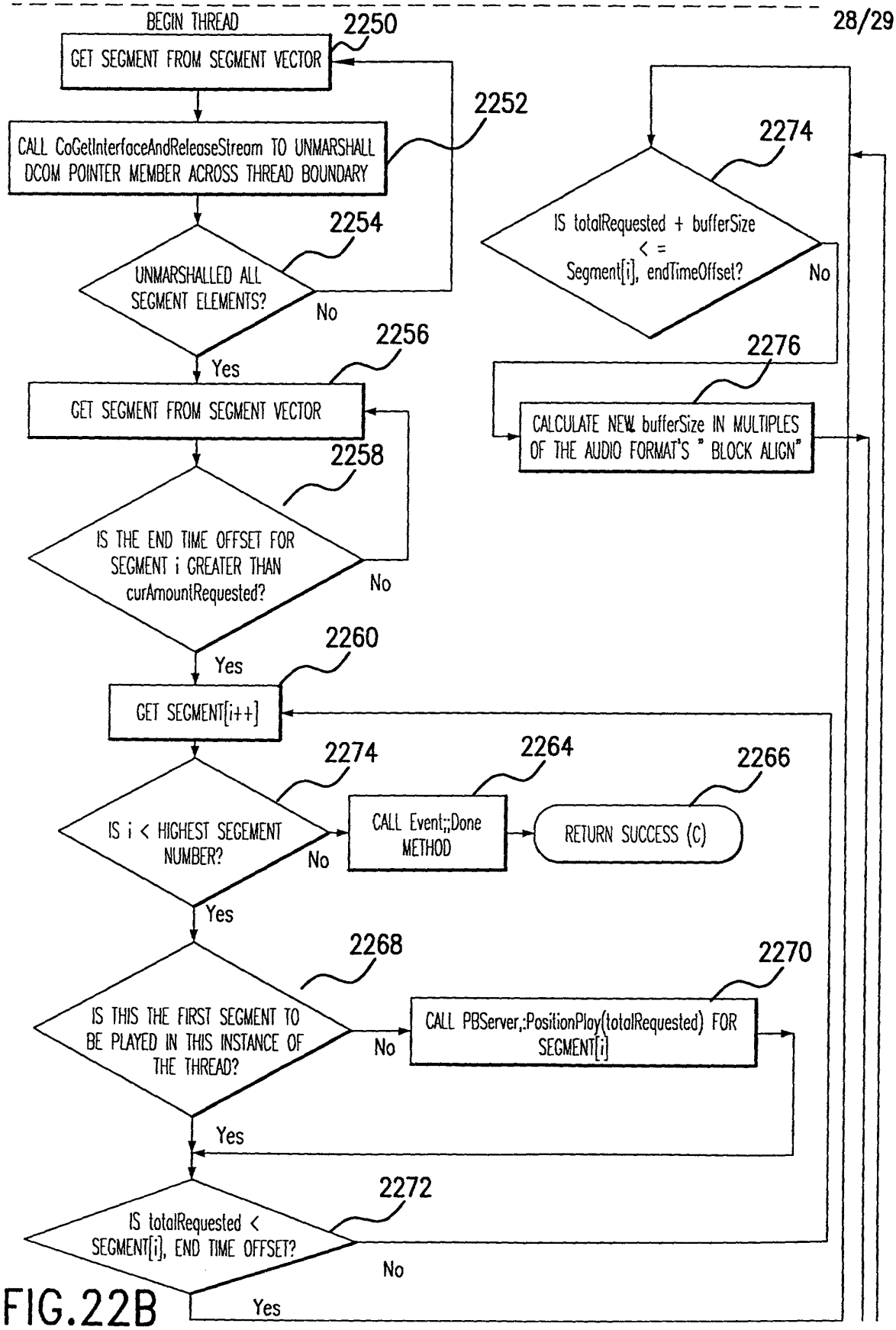

FIG.22B

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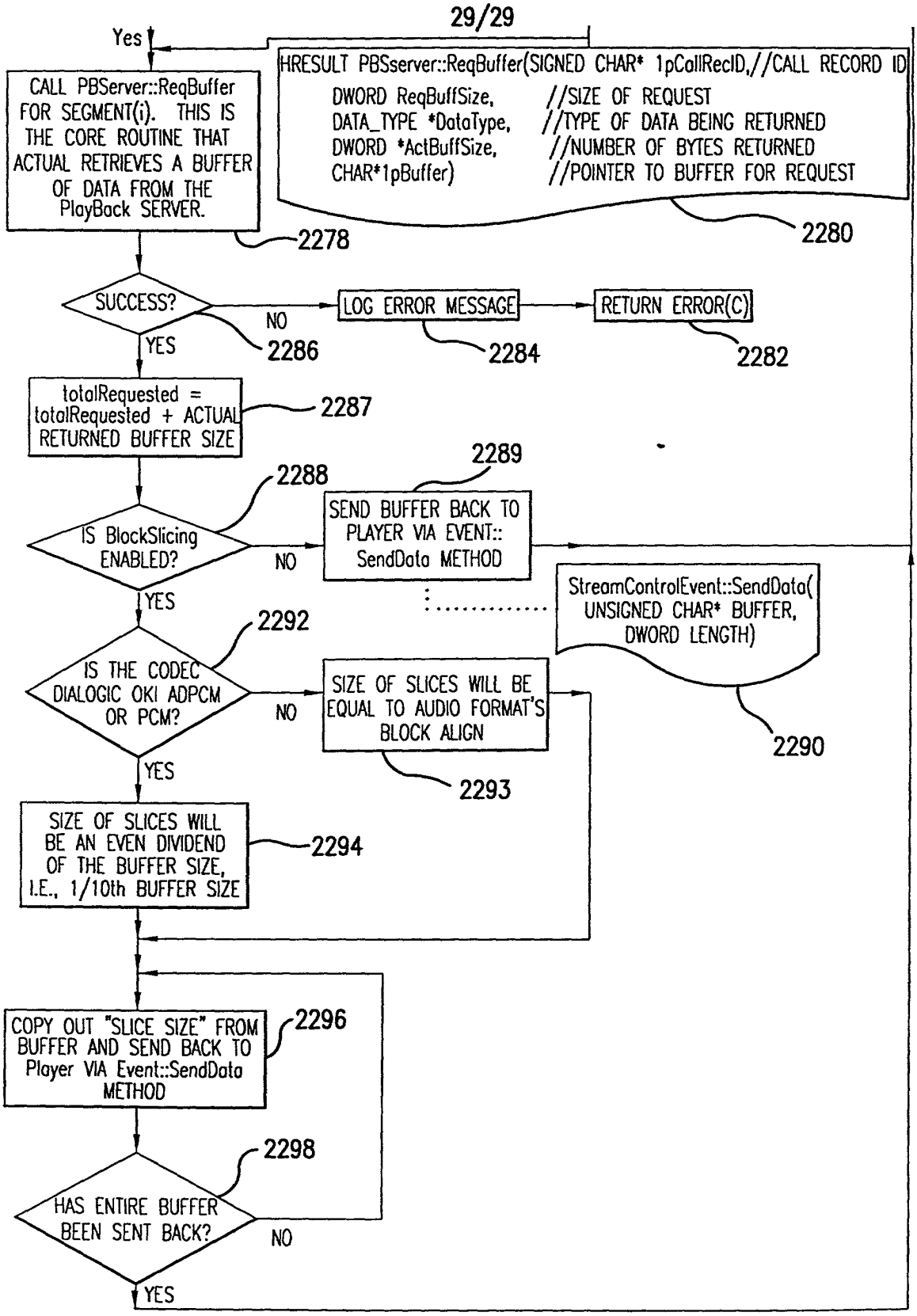

FIG.22C

5,396,588 - 06/06/94